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EDITORIAL.

Tests of Powdered Rhubarb.

IN his paper on the "Investigation of the Purity of Commercial Powdered Rhubarb as Compared with a Perfect Standard," by George W. Hayes, of Philadelphia,* the writer makes the following statements respecting the value of tests that have heretofore been considered reliable, but which, in his experience, proved fallacious:

Physical—Dr. Squibb's: "When two powders (rhubarb) are exposed on a table to the action of light and air for two weeks, the powder of the bad or mixed rhubarb turns of a *very light color;* it changes its color entirely, while the good rhubarb does not change to anything like the same extent." Mr. Hayes says: "On the contrary, after repeated trials, I have found that *any* sample of powdered rhubarb, instead of becoming lighter, will in every case become *darker* after being exposed to light and air for two weeks."

Pharmaceutical—Dragendorff's: "The presence of chrysophanic acid in a condition (free) extractable by cold petroleum spirit is a test of the quality of the rhubarb. Good rhubarb yields a colorless extract with petroleum spirit, while a rhapontic rhubarb yields an intensely yellow extract." Mr. Hayes says: "*All* the samples (including the standard) gave exactly the same colored solution, namely, a bright yellow."

Chemical—Normandy's: "Gamboge may be readily detected by digesting a portion of the powder in ether, and pouring a few drops of the solution in water. If gamboge is present, a film of an opaque, yellow color will be observed floating on the surface, which, on adding potash, is dissolved with an intensely red color." Mr. Hayes says: "All the samples acted the same way with this test, giving a red color. A small portion of the standard was purposely adulterated with five per cent of gamboge, and both it and some of the unadulterated standard tested by this test. No difference could be observed, both solutions becoming red."

In testing for the active principle, which seems to be the most practical, all things considered, the method of Mr. Henry Greenish* was followed, and consisted in completely exhausting one hundred grains of the powder with cold distilled water, carefully evaporating the percolate to thirty-three cubic centimeters, and when cold adding 45 *cc.* of ninety-five-per-cent alcohol. The mixture, after thorough shaking, is then set aside for twenty-four hours, and the precipitate then carefully collected on a tared filter, well washed with stronger (ninety-five per cent) alcohol, dried, and weighed. This gives the *mucilaginous matter.* The filtrate, being carefully evaporated to dryness, is to be dissolved in stronger alcohol with the *smallest* quantity of distilled water to make a clear solution measuring 15 *cc.* To this is to be added 120 *cc.* of absolute alcohol, and the vessel, well corked, is to be set aside for twenty-four hours. The precipitate, being collected, washed with absolute alcohol, and dried, gives the amount of *cathartic acid* contained in the powder.

Some of the samples examined by Mr. Hayes contained more cathartic acid (the laxative principle) than the standard, and the inference that may be drawn from his investigations of twelve specimens, some of them obtained from thoroughly respectable and conscientious dealers, is that powdered rhubarb may be of value commercially, but is not to be depended on therapeutically. In other words, we may paraphrase a famous *mot* by *Punch*, as follows:

"*Advice to those about to purchase commercial powdered rhubarb.* DON'T!"

The National Association of Retail Druggists.

THE success which has followed the organization of a national association of wholesale druggists has led, quite naturally, to the inquiry whether a trade-organization of retail pharmacists might not further the interests of the latter class. At the time when the New York State Pharmaceutical Association was founded we mentioned the importance of trade questions, and urged that they should receive a fair share of attention. It is easy to understand, however, that associations organized primarily for the advancement of scientific pharmacy may not be the best fitted to represent interests of a purely business character which concern their members; and it is, moreover, noticeable that many of those who are most successful as pharmacists, from a business point of view, are not the ones who are able to devote much attention to the scientific aspects of their calling. Whether the organization of the new association will enlist the active support of any considerable number of this class, remains to be shown. Some organization for mutual advantage and protection appears, however, to be needed just now, and it is to be hoped that at the initial meeting, to be held in September, there may be a large and representative attendance.

* Allaire, Woodward's & Co.'s First Prize.

* *Pharm. Jour. and Trans.*, May 17th, 1877, pages 933-936.

[Original Communication.]

Historical Notes on Arsenic and its Principal Combinations.

BY PROF. JAMES F. BABCOCK, OF BOSTON.

THE native red and yellow sulphides of arsenic (realgar and orpiment) are mentioned by Theophrastus (B. C. 315). The former he calls *σανδαράκη*, the latter *ἀῤῥενικόν*. In his *History of Stones*, he says:

"Nor ought those (stones) to be less considered which are singular and remarkable in their colors, and for that reason used by painters.

"The production of these, as was observed in the beginning of this treatise, is from the mere afflux or percolation of their constituent particles.

"Some of these seem burnt, and to have suffered changes by means of fire, as sandarach, orpiment, and others of that kind; all of them, however, plainly speaking, owe their present form to the exhalation of their more humid parts, and these, in particular, seem to have been dried and, as it were, smoked. They are found in mines of gold and silver, and some in those of copper also.

"Of this kind are orpiment, sandarach, chrysocolla, reddle, ochre, and the *lapis armenius* [*κύανος*]. . . .

"Painters use this reddle in their pictures, as also ochre instead of orpiment; for, when powdered, they scarce at all differ in color, however different they appear in the mass."*

The word arsenic, *ἀρσενικόν* [*from ἄρσεν, male, in allusion to the mystic doctrine of the male and female principle*],† first occurs in the writings of Dioscorides (1st Cent.).

He says: "Arsenic (orpiment‡) is found in the same mines as sandarach§ (realgar‖). That sort which is found in compact pieces, friable, of a golden-yellow color, and free from all admixture, is reputed to be the best." He directs that arsenic should be prepared by heating it on live coals until it burns and changes color, when it is cooled and ground to powder.¶ Thus heated, the orpiment would contain considerable white arsenic (arsenious oxide), hence the poisonous properties he attributes to these minerals. He says:

"Sandarach and arsenic taken in drink occasion violent pains in the intestines which are powerfully corroded."

As antidotes, he recommends decoctions of linseed, rice, and emollient emulsions.**

Other medical writers who succeeded Dioscorides mention the caustic and depilatory action of arsenical preparations.††

Pliny (A.D. 77)‡‡ gives substantially the same account of the native sulphides as Theophrastus and Dioscorides. Of *arrenikon* (orpiment), he says: "For the purpose of increasing its energies, it is heated in a new earthen vessel until it changes color." Under the name *auripigmentum*, Pliny§§ describes orpiment as "a mineral dug from the surface of the earth in Syria, and much used by painters. It is just the color of gold, but brittle like selenite (*lapis specularis*). This substance greatly excited the hopes of the Emperor Caligula, a prince who was most greedy for gold. He accordingly had a large quantity of it melted, and really did obtain some excellent gold, but then the proportion was so extremely small that he found himself the loser thereby.‖‖ Such was the result of an experiment prompted solely by avarice, and this, too, although the price of the orpiment itself was no more than four denarii¶¶ per pound.***

Vitruvius (1st Cent.) refers to *auri pigmentum* as the same substance which the Greeks call *arsenicon*, mentions its use as a pigment, and names Pontus as a locality.†††

(To be continued.)

Test for Ammonia.

DR. G. CROUPA says that papers saturated with fuchsine solution, made yellow with sulphuric acid, are a very sensitive test for gaseous ammonia. Ammonia invariably turns them red.

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* Theophrastus, Fragmenta ii. (De Lapidibus), 50, 51. History of Stones, lxxxvii., lxxxviii., lxxxix., xc. English translation by Sir John Hill. 2d edition. London: 1774.

† At the time when the term *ἀρσενικον* was first used, the doctrine of the male and female principle had not yet been so clearly developed to make it probable that the above name was *selected*, consciously, with special reference to it. It is, however, quite in accordance with the mode of reasoning and the use of similes among ancient peoples, to apply to strong, powerful, and energetic things and actions either nouns or adjectives implying "male," "female," and the like. Many examples can be cited for this. In later times, particularly during the alchemistic period, considerations of this kind helped to develop the doctrine of the male and female principle.—Ed. New Rem.

‡ Orpiment is derived from the Latin *auripigmentum*, "gold-pigment."

§ Aristotle, Dioscorides, Strabo, Plinius, and other Greek and Roman writers, apply the term *sandaráchē* or *sandaráchē* to the orange-red sulphide of arsenic (realgar), of which the most valued kind was brought from the Hellespont (acc. to Dioscorides), or from Khorasân (acc. to Rhazes). But Dioscorides, in his description of the properties and uses of sandarac, evidently confounds the arsenical *sandaráchē* with the resin sandarac, for he states that "it is used, mixed with resin, as a fumigation to be inhaled through a tube in chronic cough, etc., etc.," which could certainly not be done with realgar.

The Persian and Arabic physicians generally used different terms to denote the vegetable and the mineral "sandarac." The former is called *sandarûs* or *sindarûs*, and the lattter either *zernîch* (formed by transposition from the Greek *arsenik-ón*) or *shakk*. Avicenna, however, also uses *sandarûs* ("sandarac") to denote both substances; but he does not confound them either as to origin or properties (see Canon lib. ii., tract. ii., cap. 619 and ii., ii., 48).

According to an old custom, married Hindu women make a mark upon their foreheads with a species of red lead or minium, which is known under various names, chiefly *sindûra*. This term, however, is not known to occur, in this sense, in any Sanskrit texts written before about the tenth century. Other authors, chiefly lexicographers, also make it denote a tree, and others, again, make it synonymous with *rocanâ* (pronoune: *rotshanâ*) and similar words which denote a peculiar yellow pigment, said to be obtained from the stomachs of cows, and to which great medical virtues are assigned; and there can be no doubt that the word was applied to substances of different nature and origin, but of similar appearance, because no one could at that time distinguish them chemically. Now among the synonyms of *sindûra* there are found some which appear to be of special interest here. In a Sanskrit work on Materia Medica, entitled *Râjanighantu* ("king of lexica"), and composed by a Cashmir physician, Narahari, between about 1235 and 1250 A.D., in the chapter on minerals, lib. xiii., 52 (edited by Rich. Garbe, 8vo, Leipzig, 1882—we possess the whole work in manuscript) there are mentioned fourteen synonyms for *sindûra*, one of which is *sandhyâ-râga*, meaning "having the color of sun-set," a very apt name, and one which may have been quite common among the people to denote certain reddish or deep-orange colored substances, though it does not occur in the common literature. This term appears to offer the best etymology for *sandaráchē*. The Persians would have made from it *sandyarâg* or *sandarâg*, but this does not occur. Instead of it, we find *sandarûs* (*sindarûs*, *sindarôs*). The latter, however, is identical in meaning with *sandhyâ-râga*, as it is evidently derived from Sanskrit *sandhyâ+ruc* (pronounce *rutsh*) "having the shine of sun-set." That the word *sandaráchē* reached the west from India, by way of Persia, is made highly probable by the statement of Rhazes, that the best realgar came from Khorasân. It is not at all unlikely that *sindûra* is merely a corruption of *sandarûs*.

It cannot be shown by any documentary evidence how one and the same word came to be applied to two substances of such different origin as the resin sandarac and the arsenical sulphide realgar. Yet it may be surmised that the similarity in color, the inability of the ancients to distinguish them chemically, and the frequent employment of both for similar purposes brought about the confusion, for which we have several examples even in modern times.—Ed. New Rem.

‖ Realgar is derived, according to Dozy (*Dozy et Engelmann, Glossaire des mots espagnols et portugais dérivés de l'arabe.* Leyde et Paris, 1869, p. 332. *Dozy, Supplément aux dictionnaires arabes*, Leyde, 1878, i., 562) from *rahj-ul-ghâr* "powder from the cave or mine," and he refers to Ibn Bait'âr, vol. ii., p. 56 of the Cairo edition. We find, however, on consulting our own copy of this work, that the Arabic text there quotes two synonyms for *shakk* "arsenic," namely, *samm-ul-fa'r*, "poison for *rats*," and *rahj-ul-fa'r*, "powder for *rats*." Dozy evidently reads *ghâr* (cave, etc.) for *fa'r* (rat, mouse, etc.), the two words being easily confounded by copyists. Leclerc, in his French translation, follows the printed text.—Ed. New Rem.

¶ Dioscorides, *Mat. Med.*, ed. Kühn, lib. v., cap. 120 (comp. 121).

** De Venenis, ch. xxix.

†† Celsus, v., 7. Plinius, Hist. Nat., xxxiv., 55, 56, xxv., 22; xxviii., 64. Galen, De fac. simplic. med., ix., 3.

‡‡ Hist. Nat., xxxiv., 55, 56.

§§ Hist. Nat., xxxiii., 22.

‖‖ Gold is sometimes found in small proportion, associated with orpiment, ochre, and pyritous ores.

¶¶ A denarius equals about seventeen cents.

*** Hist. Nat., xxxiii, 22; Bohn's Edition, vol. vi., p. 104.

††† De Architectura, vii., 7.

On Chloride of Zinc Tow.

BY EDWARD HIRSCHSOHN, MAG. PHARM., OF DORPAT.

(Communicated by the author.*)

THE employment of tow or oakum† as a dressing for wounds is quite old. According to Gerdy,‡ tarred tow (oakum) was much used toward the end of the time of Hippocrates. Its antiseptic property was highly recommended, and it found extensive employment in the American war of the rebellion. In 1880, Dr. Weljaminow§ reported that tow, which had been treated shortly before application with a ten-per-cent carbolic spray, was used successfully in Dr. Reyher's clinic in St. Petersburg. For some time past, also, dry tow impregnated with chloride of zinc has been used as a cheap substitute for the expensive salicylated cotton in the surgical clinic of Prof von Wahl, in Dorpat. A report on the success of this method of treatment has been reported by Dr. Drombowsky,‖ the present clinical assistant, who states that the dressing is prepared in the following manner:

"The tow was picked, carded, and then placed in an oven arranged for sulphur disinfection. After having been exposed for twelve hours to the vapor of sulphur, it could be assumed that any germs absorbed from the air had been destroyed. It was then saturated with an eight to ten-per-cent solution of chloride of zinc, and the excess of the solution removed by a press, somewhat like that used by bookbinders.¶ The tow was next dried, at ordinary temperature or at a moderate heat, being repeatedly turned over, and was after twenty-four hours sufficiently dry to permit being again carded. Finally, the material was formed into flat cakes of the size of plates, about one and one-half inch thick, and transferred to air-tight tin boxes, containing caustic lime, in order to prevent its decomposition by the carbonic acid of the air."

It was now of interest to ascertain, first, whether the process here described furnishes a completely aseptic dressing, and, secondly, whether the percentage of chloride of zinc contained therein was approximately uniform.

To decide the first-mentioned point, it seemed advisable to use a method already used by former investigators, as Pasteur, Cohn, etc., and lately, also, by Prof. Frisch, of Vienna.** This consists in bringing the material to be examined for the presence of vital sperms or surviving spores into a medium favorable for their development. But, as it has been shown by the experiments of Billroth,†† Kuehn,‡‡ and Boehlendorf,§§ that different forms of bacteria do not develop and grow equally in all propagating media, it was necessary to use several of the latter. I selected four of them, namely, the following:

a. Pasteur's propagating liquid, modified by Buchholz‖‖: Sugar (candy), 100; nitrate of ammonium, 10; neutral phosphate of potassium, 5; distilled water, 1000 parts.

b. Cohn's propagating liquid, modified by Eidam¶¶: Acid phosphate of potassium, 5; sulphate of magnesium, 5; neutral tartrate of ammonium, 10; chloride of calcium, 0.5; distilled water, 1,000 parts.

c. Solution of extract of meat, containing 1 per cent of the extract.

d. Normal urine.

The three first-mentioned liquids were first filtered, boiled from one-half to three-quarters of an hour, and the evaporated water replaced by addition of boiling distilled water. The urine was prepared for use by boiling for half an hour, then filtering, and again boiling the filtrate for half an hour, the lost water being replaced as in the other cases. The prepared liquids were transferred to propagating vessels, consisting of opodeldoc glasses (holding one and a half to two ounces), which were closed with tight plugs of cotton. Before the liquids were introduced, the vessels and plugs were heated during one hour to 180° to 200° C. (356°–392° F.), then allowed to cool sufficiently to permit the liquids being poured in, immediately stoppered and transferred to a hatching oven.* The temperture in the oven varied from 36° to 38° C. (about 96°–101° F.). After the vials had been in the oven for a fortnight, it was found that, with the exception of a few, all of them had remained clear. The turbid ones were removed, and in each of the others one gram each of the samples of tow to be examined was introduced, great caution being used to rapidly open and close the vials. To obviate the objection that the mere lifting of the plug might have been sufficient to infect the contents, a few vials, in which the plug had been lifted in the same manner, but without any tow being introduced, were placed with the others in the oven. As criterion to pronounce upon the existence and development of germs in the several liquids, the appearance of a turbidity was relied upon.

Now, since crude tow (oakum) itself had already been in use for a long time as a dressing for wounds, it was of interest to find whether this alone, unprepared, fulfilled the requirements as an antiseptic dressing, although it could be presumed *a priori* that during its long exposure to all sorts of contaminating agents it had become infected.

Results with unprepared tow (oakum).—All trials made with this showed that the tow contained living germs, which became more or less rapidly developed in the propagating fluids.

Results with sulphurized tow.—In this case the development of germs was slower than in the preceding cases. Yet after four days all propagating liquids were turbid. The tow had been kept for twenty-four hours exposed to the vapor of burning sulphur. This apparent inability of sulphurous acid gas completely to destroy the vitality of germs is also shown by a series of experiments lately made by the German Imperial Health Department. A better result was obtained by treating the tow with chlorine gas or chlorine water.

Results with chlorinated tow.—Tow which had been treated for twelve hours with chlorine gas, or been kept covered for half an hour with officinal chlorine water, then expressed and introduced into the propagating vessels, failed to show the development of any germs, even after standing for months

Results with chloride of zinc tow prepared by cold soaking.—Picked tow was completely saturated with a ten-per-cent solution of chloride of zinc, the excess of liquid pressed out between two small boards, and the tow dried at the ordinary indoor temperature. When completely dry, the tow was carded and then used. Two separate series of experiments were undertaken, each with twelve vials. In both series all the liquids developed fungi, etc., which covered, after three weeks, the whole surface of the liquid. The results showed that a simple treatment of the tow with a ten-per cent solution of chloride of zinc was insufficient to destroy vital germs. Now, as it is known that the latter can be killed by a temperature of 100° C. (212° F.)

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* From *St. Petersburger Medic. Wochenschrift*, 1882, No. 50.

† We have uniformly translated the term "Schiffswerg," which the author uses, with "tow," although he specifically states, in a subsequent portion of the paper, that it is prepared from old, condemned *tarred* ropes, . . . which have probably lost a good deal of their tar by long exposure. This would, under ordinary circumstances, have to be rendered in English by "oakum;" but the article usually sold here under this name contains too much tar to readily absorb aqueous solutions. Tarry oakum is much used for dressing, particularly in this country; but the tow or oakum meant by the author is that made from *old* tarred ropes, which have lost their stiffness. And it seems to us that plain tow, which has never been tarred, will answer the purpose even better.—ED. NEW REM.

‡ Dr. Fischer, *Handbuch d. Verbandlehre*, 1878, p. 7.

§ *Centralblatt f. Chirurgie*, 188 , No. 41.

‖ *St. Petersb. Med. Wochensch.*, 1881, No. 32.

¶ A common clothes-wringer is, in our experience, the best contrivance for such purposes.—ED. N. R.

** In his paper "Ueber die Desinfection von Seide und Schwämmen zu chirurgishen Zwecken, in *Archiv f. Klin. Chir.*, vol. 24, 1879, p. 749.

†† *Untersuchungen über die Vegetationsformen der Coccobakterien*, Berlin, 1874, p. 58, 121.

‡‡ *Ein Beitrag zur Biologie der Bacterien*. Dissert. Dorpat, 1879.

§§ *Ein Beitrag zur Biologie einiger Schizomyceten*. Dissert. Dorpat, 1880.

‖‖ *Arch. f. experim. Pathol. und Pharmakol.*, iv., 3.

¶¶ *Cohn, Beiträge zur Biologie der Pflanzen*, 1.

* For this purpose I used a double-walled box made of tinned iron, such as is used for the preparation of Lister's carbolic gauze, and has been described by me in a paper on the preparation of salicylated and benzoated dressings in the *Voyenno-Meditsink. Journ.*, 1880, July number. The box held 250 vials.

and over, a new trial was made, in which the tow was boiled for half an hour in the ten-per-cent solution.

Results of chloride of zinc tow prepared by boiling.—Four separate series of experiments, each with twelve vials, furnished identical results. No development of fungi, etc., could be noticed in any of the liquids, even after standing for months. On repeating the experiment with a five-per-cent solution of chloride of zinc, the same result was obtained.

The second point which I desired to determine was, whether the percentage of chloride of zinc in the finished dressing was approximately uniform. For this purpose, Balling's* volumetric method was used, which consists in determining the zinc by means of carbonate of sodium, with phenol-phthalein as an indicator.† I employed a solution of carbonate of sodium of such a strength that 1 cubic-centimeter corresponded to 0.0209 gm. of chloride of zinc. The determination was made thus: 5 gm. of the air-dry chloride of zinc tow were macerated with 100 *cc.* of distilled water, for twenty-four hours, in a closed vessel, under repeated stirring; then 25 *cc.* were measured off, diluted with 250 *cc.* of boiling distilled water in a flask, heated to boiling, a few drops of an alcoholic solution of phenol-phthalein poured in, and the volumetric solution of carbonate of sodium added, until the liquid assumed a distinct rose-color. The following results were obtained:

a. Tow, previously carded, boiled with a 10 per cent solution of chloride of zinc, dried in a room, and then again carded, yielded, in an air-dry condition, 14.83 per cent of chloride of zinc as a mean between 4 determinations. In another sample 14.58 per cent were found.

b. Tow treated exactly like the preceding, but with a 5 per cent solution only, yielded 8.85 (another sample 8.67) per cent of chloride of zinc.

c. Tow treated as under *a*, but dried at 60°–70° C. (140°–158° F.), and then carded, yielded, after one day's exposure to the air, 12.86 per cent of soluble chloride of zinc.

d. Tow treated as under *c*, but prepared with a 5-per-cent solution, yielded 7.01 per cent of chloride of zinc.

The preceding figures show that the dressings contain practically uniform quantities of the salt. The circumstance that tow soaked in a 10-per-cent solution of the salt retains more than 14 per cent of the latter, is explained by the fact that it soaks up about one and one-half times its weight of the solution. The quantity of the salt in the samples dried at 60°–70° C. is smaller, which is partly due to the loss caused in the process of carding.

For the purpose of ascertaining the keeping qualities of the dry chloride of zinc tow, a new assay of the samples was made after six months.

a. Samples which had been carded and been kept loosely in filtering paper yielded 11.52 (or 10.33) per cent $ZnCl_2$, while they had formerly contained 14.75 and 14.38 per cent, respectively.

b. Samples which had been kept, uncarded, in waxed paper, lost scarcely anything; those which originally contained 14.75 and 14.38 per cent were found to assay 14.70 and 14.51 per cent.

Chloride of zinc tow, therefore, may be kept, practically unaltered, for a considerable time, if wrapped in waxed (or paraffined) paper.

On the basis of the results here described, I propose the following method for preparing this form of dressing, of a strength of about 15 per cent:

PREPARATION OF CHLORIDE OF ZINC TOW.

Commercial, crude tow is thoroughly carded, then boiled for half an hour with or 15 times its quantity of a 10-per-cent solution of chloride of zinc, in a kettle which can be closely covered. It is then pressed between two hinged boards, and dried in thin layers, at the ordinary indoor temperature. When dry, it is either at once carded, or it may be preserved uncarded in waxed paper.

If the tow is to contain 10 per cent of chloride of zinc, a 7-per-cent solution of the dry salt is taken; and for a 5-per-cent dressing the strength of the solution is reduced to 3½ per cent.

When thus prepared, and particularly after being several times carded, the prepared tow is quite soft, and advantageously replaces salicylated cotton, owing to its cheapness.

I have also made some experiments to test the antiseptic properties of the dressing thus prepared, compared with those of salicylated cotton and jute. [The tables appended by the author must be omitted here, for want of room; the results are summarized as follows:] 3 grams of the respective kind of dressing were added, each, to 100 *cc.* of fresh urine, in vials which were kept open, and at a temperature of 30° to 35° C. (86° to 95° F.). A sample of the urine alone became offensive after four days; two others treated with an 8.5-per-cent and a 14.6-per cent chloride of zinc oakum, as well as one treated with a 10 per cent salicylated cotton, were still clear and acid after six days; another containing some 4-per-cent salicylated cotton became turbid after three and offensive after six days; and one sample treated with some 4-per-cent salicylated jute (which had, however, been carelessly kept) became offensive after two days. In another series of experiments, 5 grams of the respective dressings were, each, added to 100 *cc.* of already offensive and alkaline urine; the samples containing a ten-per-cent salicylated cotton, and that with an 8.5-per-cent chloride of zinc tow, though at first rendered neutral, soon became offensive again; but the sample treated with a 14.7-per-cent chloride of zinc tow turned gradually clear and acid, and remained so at the end of the second day.

These results confirmed the decided antiseptic properties of chloride of zinc, already reeognized by most surgeons.

Tow (or oakum) may also be impregnated with other antiseptics, such as carbolic, salicylic and boric acids, iodoform, etc., by slightly modifying the above process, as I have found by preliminary trials. Special directions for their preparation will be published at some future time.

* *Chemiker-Zeitung* (1881), No. 23, p. 395.

† Before using the method, I convinced myself that an aqueous extract of crude oakum with carbonate of sodium yielded no precipitate, and that the solution was free from ammoniacal salts, since the presence of the latter, according to Balling, retards the appearance of the end-reaction.

External Use of Iodide of Barium.

THIS active poison has been used in France as an application to enlarged lymphatic glands and, more especially, as a local application in chronic eczema. For the latter purpose it can be mixed with a petrolate.—*Med. Record.*

Guachamaca.

THIS is a Venezuelian plant, which is said by Mr. Schiffer, of Berlin, to act very much like curare in allaying general spasm, or, in large doses, in producing general paresis. The juice taken from the plant in the rainy season is most powerful. An experiment was made with it in Frerich's clinic upon a young man who, suffering from cramps, was given a centigram of an extract, hypodermically. For three quarters of an hour no effects followed, but the patient then fell asleep for three hours. Respiration and circulation were not affected.

Mustard and Molasses Cataplasm.

DR. TYSON, of Philadelphia, says that the addition of molasses to mustard in making a sinapism furnishes a mild, persistent, counterirritant which can be worn for hours.

This reads very much like a formula we published some years ago, in which the white of an egg was recommended as a vehicle for a mustard plaster—the advantage alleged for it being, that it could be applied for several hours, and would not vesicate. Not long afterward, however, we had a letter from some one who, to this sorrow, had acted on the suggestion, and was then hunting for the rascal who proposed it.

Asor Thurston

The Action of Certain Drugs on the Sensitive Plant, Mimosa Pudica.*

BY A. S. RAUSCHENBERG, PH.G., OF ATLANTA, GA.

THE old authors have from time to time used the term "sleep of plants" to designate the peculiar nocturnal position assumed by most compound leaves. Ever since the days of Linnæus, we find recorded investigations of this phenomenon.

In "Curtis' Lectures on Botany,"† we find a very interesting discourse on the relation of the movements of plants and animals.

Ducrochet‡ endeavored to show that the motion of the mimosa is the effect of galvanic agency.

MM. Bert and Blondean (1868) experimented on the plant with galvanism.

Mr. C. Mackenzie has shown that the movements of the leaves have their origin in the nodules situated at the articulation of leaflets with the petiole and of the petiole with the stem.

Of more recent date, we have the well-known work by Darwin, "The Power of Movement in Plants," in which he investigates the so-called "sleep of plants."

He also shows that leaves compelled to remain horizontally at night suffer more from radiation than those allowed to assume the vertical position; it makes no difference whether the apex, the base, or one of the lateral edges is directed to the zenith.

This position which the leaves occupy at night shows that the benefit derived therefrom is the protection of their upper surfaces from radiation and the mutual protection of all the parts from the cold by being closely imbricated.

If with *Mimosa pudica* the opposite leaflets would simply move upwards, their upper surfaces only would come in contact and be protected; but, as it is, they move toward the apex, and they thereby become imbricated and protect one another as well as the petioles.

He also shows that many plants will not "sleep" unless they have been well illuminated during the day; this proves that it is not the decrease of light in the evening, but the contrast between the amount at this hour and during the early part of the day, which excites the leaves to modify the ordinary mode of circumnutation.

Brücke has shown that the movement caused by irritation results from a different state of turgescence in the cells from that which results during sleep.

Prof. Marcet performed experiments upon the plant with chloroform and ether.

These experiments were repeated and verified by Dr. Porcher, who states that the tinctures of opium, capsicum and camphor, and morphia and tartarized antimony, produced no effect, while chloroform and ether were the only drugs which caused a contraction of the leaves. He also states that "A drop of oil of aniseed, placed on a leaf-stalk, seemed to have the effect of arresting the transit of any influence beyond it."

Other authors have experimented on the various species of sensitive plants, but none mentions having used other agents besides chloroform, ether, oil of aniseed, tartarized antimony, morphia, liquor potassæ, sulphuric and nitric acids, and a few tinctures of active drugs.

In the experiments mentioned below, it will be seen that I have used a larger number of drugs, and in several instances procured quite different results from those mentioned by these various authors.

During my investigation, the plants were kept in a conservatory at the temperature of 80° F. (26.6° C.). A separate plant was used for each experiment, which was performed by applying a drop of the liquid drug directly to one of the pinnæ.

The leaves of *Mimosa pudica* possess a remarkable degree of sensibility or irritability. When roughly touched, the plant suddenly contracts its leaflets, and applies them one over the other upon the secondary petiole.

If more strongly irritated, the secondary petioles are also bent forward, and approach each other, while the main petiole sinks at the articulation with the stem.

These motions are also produced by anæsthetics and other drugs, but are prevented by low temperatures.

As an illustration, I will describe the effect of chloroform:

When this substance is applied to the apex of the lateral pinna, the opposite leaflets, with the points forward, approach each other seriatim, and fold one over the other, thereby protecting the upper surfaces.

Next, the main petiole sinks by the bending of the articulation with the stem.

After this, the leaflets of the remaining three pinnæ contract successively as the sympathy passes from the articulations to the apices.

At the same time, the four pinnæ slowly approach each other until the whole leaf forms a compact bundle.

After about three or five minutes, the next lower leaf on the main stem of the plant sinks by the articulation of the primary petiole, and then the leaflets of the four pinnæ contract as the sympathy passes to the apices. Four or five leaves below the one to which the drug was applied are affected in the same manner; in this respect, my results do not coincide with those of Dr. Porcher.

The following list of drugs have the same effect as that produced by chloroform:

1st. Acetic, formic, ethylic, hydriodic, hydrobromic, hydrochloric and methylic ethers, nitrite of amyl, carbon disulphide, ethylic and methylic alcohols.

2d. Sulphuric, nitric, nitro-hydrochloric, hydrobromic, hydrofluoric, phosphoric, sulphurous, chromic, carbolic, acetic, monochlor-acetic, lactic, and oxalic acids; iodine, chlorine, and bromine waters; creasote and essential oils, as anise, mustard, etc.

Those in the first list do not cause the leaflets to become so densely imbricated as those in the second list.

Many substances have an effect which can only be attributed to the alcoholic solvent, as a glance at the lower list will show. The following tinctures give the same results as alcohol, namely, aconite, belladonna, opium, nux vomica, hyoscyamus, digitalis, capsicum, conium, and veratrum.

Certain other physiologically powerful substances have no effect at all, viz., aconitine, atropine, morphine, strychnine, hyoscyamine, digitaline (so-called), duboisine, apomorphine, curare, bichloride of mercury, and tartarized antimony.

I found that *dilute hydrocyanic acid* and *tincture of cantharides* produce peculiar results.

If the former be applied to the apex of a leaflet, it will cause no irritation, but when applied to the articulations of the leaflets with the pinna, it causes a rapid contraction, the same as chloroform.

Five or ten minutes after they have re-expanded, they begin to contract in series formed by six or eight opposite leaflets; but when about half closed, they are arrested, and then slowly assume their normal position.

When tincture of cantharides is applied to the articulations of the two opposite leaflets situated in the centre of a pinna, it causes the leaflets below this point to contract in series as above described, and with a pause before each series begins to move.

It never causes all the leaflets of a pinna to contract at once; but it always proceeds downwards, that is, towards the articulation with the main petiole.

Those leaflets which have not closed may be made to do so by touching the tincture to their articulations.

About ten minutes after they have again expanded, they begin to contract in series as before, until all the previously affected ones are imbricated.

This remarkable phenomenon I found to be produced only by the two above-named substances.

Oil of anise placed in several spots on the pinnæ does not prevent the transmission of extraneous irritation beyond, that point to which it is applied.

* From a thesis presented to the College of Pharmacy of the City of New York, March, 1883.

† Vol. i., Sec. 2, 1805.

‡ "Sur la Motilité," etc., Paris, 1824.

I have performed experiments similar to those of Mr. C. Mackenzie, and with the same results as he procured, as the following will show.

By removing the lower half of the node situated at the articulation of the petiole with the stem by means of a longitudinal section, the petiole will remain depressed, it having lost the power of elevating itself. If the superior half be removed, the petiole will remain constantly elevated, it having lost the power of depressing itself.

These facts show that the motions of the petiole depend on the alternate turgescence of the upper and lower half of the pulvinus situated at the point of articulation, and that, consequently, contraction is not the principle of these movements.

The following experiments are in accordance with those of M. Ducrochet; they prove that the interior movement is propagated by the ligneous fibres and vessels.

The irritation is transmitted equally well, even if a ring of bark be removed and nothing remains to communicate between the divided portions of bark except the ligneous fibres; it is also transmitted when the parts are connected by a fibre of bark, and also when the pith is the only connecting link.

But when the communication exists only by the cortical parenchyma, the irritation is not transmitted.

Transit is more rapid in the petioles than in the stem.

The experiments with electricity are those suggested by the results of M. Blondean.

A plant was acted on by a galvanic current for about five minutes, when it became contracted, but soon again expanded its leaflets. Another operated on for ten, and still another for fifteen minutes, became contracted, but again expanded.

When it was operated on for thirty minutes, it did not re-expand its leaflets.

An etherized plant was not affected by the current.

When the plant is kept in an obscure place, and suddenly be exposed to the sun, the leaflets will contract; in this case, the sun-light seems to act as if it were a touch. This is called the "Diurnal Sleep of Plants," or "Paraheliotropism," which, according to Prof Wiesner,* seems to have for its object the protection of the chlorophyll, which is destroyed by action of concentrated sun-light in contact with oxygen.

It will be seen from what has been stated so far that I have experimented with a larger number of drugs than previous observers, and that I have classified them as substances which have the same effect as chloroform, and as such which have an effect merely produced by the alcoholic solvents, as is shown by the fact that the active principles of the same drugs produce no effect whatever upon the plant.

My experiments differ from those of Dr. Porcher by the irritation being transmitted down the main stem of the plant until four or five leaves have contracted, and by the oil of anise failing to arrest the transit of influence beyond the spot to which it is applied.

Like Mr. Mackenzie, I find by dissection of the node situated at the base of the petiole that the motions depend on the alternate turgescence of the upper and lower half of this organ.

The results, similar to those of M. Ducrotchet, prove that the interior movement is transmitted by the ligneous fibres and vessels.

The experiments with galvanism show that etherized plants are not affected by a current which would destroy them under other circumstances.

But the principal fact first shown by my experiments is, that, after the plant has recovered from the primary effect of hydrocyanic acid or tincture of cantharides, there is a secondary effect produced, similar in character to the first, after which the leaves re-expand, assuming their natural position.

*"*Die natürlichen Einrichtungen zum Schutze des Chlorophylls*," 1876.

Castela Nicholsoni—Its Characteristics and Proximate Analysis.*

BY J. L. PUTEGNAT, JR., PH.G., OF BROWNSVILLE, TEXAS.

Castela Nicholsoni (Hook.) belongs to the natural order Ochnaceæ,† which constitutes a small family of trees and shrubs, natives of tropical India, Africa, and America, the greater portion belonging to the new world.

This plant has neither the long and fleshy gynophore nor the united styles of the rest of the family, and is the type of the tribe Castela, which has extrorse anthers, a pendulous and albuminous seed, and usually polygamous flowers.

In all these points (except in the direction of its anthers and the possession of univolate carpels) as well as in other particulars, it agrees with the plants of the Xanthoxylaceæ, but differs from these in the simple and coriaceous leaves being entirely destitute of pellucid dots and of aromatic qualities.

The tribe Ochnaceæ, on the other hand, has perfect flowers, introrse anthers, and erect seeds, which are entirely destitute of albumen. It is hardly to be distinguished from the entire-leaved plants of the Simarubaceæ, except that in the latter the seed is pendulous, the short radical is retracted within the base of the large cotyledon, as in the Florkea and Nasturtium, and the filaments are furnished with an entire appendage or petaloid scale, in the manner of most of the Zygophyllaceæ.‡

Owing to the recent outbreak of yellow fever at Brownsville, Texas, I am unable to give the medical properties of Castela Nicholsoni as completely as I expected. Mr. J. L. Putegnat, Sr., of the above-mentioned place, was the first to introduce it to the medical profession. He also extracted, from the bark of the root, an amorphous bitter principle of a resinous character, partially soluble in water, soluble in alcohol and ether, which he named *amargosin*, "amargosa" being the common name of the plant.

The bitter principle he recommended to his medical friends as an antiperiodic. For the above-mentioned reason I am not able to give the results in full.

One case to which my attention was called was that of a child twelve years old affected with an obstinate remittent fever, accompanied with chills and delirium. At the end of two weeks, after full doses of quinine had failed to check its course, the amargosin was used in two-grain doses every two and one-half hours for twenty-four hours at the end of which time the fever had been broken. The medicine was then administered every four hours for three successive days, with no further return of the fever.

In case of diarrhœa and dysentery, it has long been used by the Mexicans and also by the physicians of the lower districts of Texas.

As to its physiological effects, I can only say that it is perfectly devoid of poisonous properties. It will be seen from the following analysis that the bitter principle (which, I am convinced, is a glucoside) needs further investigation.

The amount of acids in the ash will also be seen to be insufficient to neutralize the bases which exist in the plant. Some acids are undoubtedly destroyed during combustion, and also need further investigation.

The amount of calcium in the plant is indeed so great that it may be easily separated by mere percolation with an acidulated water, and, when crystallized as sulphate, one is very apt to mistake it in appearance for an alkaloid.

Results of the proximate analysis of the bark of the root of Castela Nicholsoni.

The following table represents the solubilities of one hundred parts of the drug, the different solvents being used successively in the same order in which they are written:

* From a thesis presented to the College of Pharmacy of the City of New York, March, 1883.

† Bentham & Hooker, Genera Plantarum, i., 310, place it definitely under Simarubeæ.—ED. N. R.

‡ Gray's *Genera*, p. 156.

	Parts.
Ether dissolved	6.99
Alcohol "	7.35
Cold water dissolved	5.72
Acidulated (H_2SO_4) water dissolved	2.75
Alkali (Na) solution dissolved	1.54
Insoluble substances	74 88
Lost and undetermined	0.77
	100.

Portion soluble in ether.

	Parts.	
Yields to water	0.20	of bitter principle.
" " dilute acid (HCl)	0.12	" " "
" " alcohol	1.41	" " "
" " "	0.40	resin.
Insoluble substances	4.76	wax, coloring matter, chlorophyll.
	6.99	

Portion soluble in alcohol:

	Parts.	
Yields to water	5.99	of bitter principle, organic acids, and coloring matter.
Insoluble substances	0.82	of bitter principle and resin
" "	0.54	of albuminous substances separated by heating water solution.
	7.35	

Portion soluble in cold water:

Chiefly albuminous substances, coloring matter, and gum.

Portion soluble in acidulated water:

	Parts.
Starch and isomers converted into glucose	1.71
Coloring matter, etc	1.03
	2.74

Portion soluble in alkali solution:

Coloring matter, humus, and decomposition compounds.

The drag also contained moisture 7.91%

Ash 21.22%

Ash Analysis.

	In 100 parts.
Sulphuric acid (SO_3)	0.84
Hydrochloric acid (Cl)	0.98
Soda (Na_2O)	6.77
Potash (K_2O)	32.95
Calcium (CaO)	46.09
Iron (Fe_2O_3)	1.50
Magnesia (MgO)	3.01
Clay and sand	10.32
	102.46

The excess of 2.46 parts is due to the calculation of the bases as oxides.

Tincture of Iodine.

MR. FRED. C. LEHMAN, JR., says that on the addition of a small quantity of chloride of sodium to the mixture of iodine and alcohol contained in a glass vessel, the iodine becomes very readily soluble, and the use of a mortar is entirely unnecessary.—*Amer. Jour. of Pharm.*

Antagonism between Veratria and Potassium Salts.

DR. SIDNEY RINGER finds in numerous experiments that a small dose of potassium chloride will completely obviate the effect of veratria upon the heart muscle, and restore normal cardiac contractions.—*Practitioner.*

Thompson's Chloroform Liniment.

DR. G. A. PARSONS says that this is composed as follows: Chloroform, alcohol, water of ammonia, spirit of camphor, tincture of aconite root, of each two ounces; spirit of nitrous ether, six ounces.

Pill-Making in Pharmacies.*

BY M. J. AVERBECK, PH.G.

IN the preparation of pills, the question arises: Are pills a safe and eligible form of dispensing medicine?

This question is at present being considered by the best medical authorities in Europe; some governments have even forbidden the sale or importation of the various coated or compressed pills, and although no definite conclusion has been offered, the majority agree on these points:

That pills have a local action upon the membranes of the stomach.

That substances of an irritant nature are not adapted to this form of preparation.

That, of whatever substances composed, pills should be readily soluble or disintegrated in the stomach.

That the various coated pills made by the manufacturers, on account of the drying they undergo in the process of coating, are often insoluble, and are very uncertain in their therapeutical effect; and that pills give more satisfactory results when prepared fresh by the competent pharmacist.

What conditions, then, are necessary to form a satisfactory pill? The ingredients should be thoroughly mixed; it should be readily soluble or disintegrated in the stomach; it should be moderate in size and permanent in form.

Excipients for pill masses are numerous, but their selection should be of such substances as will give the mass adhesiveness, solidity, porosity, and not allow it to become hard and dry in a short time.

Many persons in preparing pills make their first mistake in the selection of the excipient, thinking if they obtain a substance which will stick the mass together, they have obtained all that is necessary.

In this way, the porosity and solubility is neglected.

Many of our formulæ contain sufficient resinous or gummy substances, such as aloes, asafœtida, gamboge, myrrh, etc., to make a mass by the simple addition of alcohol. Some of these formulæ also contain a sufficient quantity of fibrous powder to give the mass porosity; but to such as do not contain it, the addition of a small quantity of finely-powdered ginger or elm will make a more satisfactory pill than the same mass prepared without such an addition.

Other formulæ contain sufficient of a solid extract to form a suitable mass. In such cases, the preparation is easily accomplished. When the mass does not contain sufficient adhesive substance, the excipient used should be as simple as practicable, and give the mass the proper condition.

Various excipients, prepared of glycerin and mucilaginous substances, give good results, and are extensively used. Glycerin is preferred to syrup or molasses for reason of its non-drying property. A good example is the Massa hydrargyri. I have seen a sample prepared with glycerin, which made satisfactory pills after being exposed to the air a whole year.

A good excipient is jelly of tragacanth:

Tragacanth	1 part.
Glycerin	2 parts.
Water	2 "

Place the ingredients in a water-bath, heat for ten or fifteen minutes, and a clear jelly results.

This is a convenient form of excipient, and only a small quantity is sufficient to form a mass (about one part of jelly to four parts of material). I have made a few experiments to ascertain the amount of jelly of tragacanth, also the amount of excipient as recommended by the U. S. Pharmacopœia (1870) necessary to make a few of our officinal pills.

Pil. Aloes and Ferri. To make one hundred pills, it required one hundred and seventy grains of confection of rose and ninety grains of jelly of tragacanth. The latter

* From a thesis presented to the College of Pharmacy of the City of New York, March, 1883.

made as good a mass, and rolled somewhat easier than the confection.

Pil. Aloes and Myrrhæ. To make one hundred pills, it required one hundred and ten grains of syrup and eighty-eight grains of excipient with jelly of tragacanth. The latter mass was much easier to roll, and the pills were superior to those made with syrup.

Pil. Antimonii Comp. To make one hundred pills, it required ninety grains of molasses and sixty-two grains of excipient with jelly of tragacanth. The latter made a very good mass, and the pills were of better appearance than those made with molasses.

These experiments will show the adaptability of such an excipient to many substances which are prescribed in large bulk, and allow the addition of only a small quantity of excipient to form the mass. For masses containing calomel, subnitrate of bismuth, quinine, bromide of potassium, sulphate of iron, bicarb. of sodium, or many such unadhesive substances, the jelly of tragacanth makes a good excipient.

Sulphate of iron or other salts containing water of crystallization should be carefully dried before being made into pills.

For quinine pills, the jelly, with a small quantity of tartaric acid, makes a very firm and presentable pill.

Sulphate of quinine ..... grs. xij.
Tartaric acid ..... gr. i.
Jelly of tragacanth ..... grs. ij.

If the quinine is dry, one drop of glycerin should be added.

For Camphor Pills. The jelly, with the addition of ten per cent of powdered althæa root gives a pill that does not break down or run together, and is readily soluble. For a small quantity of essential oil, the jelly forms a good mass with a small quantity of a fibrous powder.

Such an excipient as jelly of tragacanth, "always ready," commends itself for use in every pharmacy.

A large quantity of essential oil is readily made into mass by means of wax. Care should be taken that too much is not used, for in large quantity it hinders the solubility of the pill.

A convenient form for use is a solution (one part of yellow wax to five parts of ether fortior). One or two drops of this solution is sufficient to make a dozen pills.

Warming the mortar and pestle, or slab and spatula, before mixing the ingredients facilitates the working of the mass, and often requires less excipient.

Pill Coating. Coated pills may be prepared by the pharmacist, and with a little practise they will compare favorably with the manufacturer's product. The following simple process gives a good result

Ingredients used are French chalk or talc powder, and thin mucilage of gum Arabic (one part of gum Arabic to eight parts of water).

Apparatus needed: A flat-bottomed evaporating dish, capacity twelve ounces; two covered gallipots, one holding six, the other holding twelve ounces; and a pill-tray.

The pills should be perfectly round, and not too dry, so as to have a good shape when finished. Put the talc in the small gallipot, the pills and a sufficient quantity of the mucilage as will thoroughly moisten them in the evaporating dish; shake until well moistened, then turn them into the talc.

Shake until well covered with the talc, place them on the pill-tray to dry for a few moments, and finally turn them into the large gallipot, and shake so as to give them a gloss, and rub off the unnecessary powder.

Any number of pills, from six to one hundred, may be coated with this apparatus at one operation. For pills to be kept in stock, they should have a second coating, the same as the first.

The second coating should not be attempted before the first is thoroughly dry.

Every pharmacist should make all the pills necessary to be kept in stock, and should be prepared to make such as are liable to be prescribed. He should urge the sale of his own preparations, and prevent the necessity of keeping on hand a full stock of several manufacturers' products.

By making his own pills, the pharmacist will gain the confidence of both physician and patient; will know the accuracy and quality of the medicine dispensed, and will render a great service to his assistant by giving him the means of becoming proficient in this important branch of pharmaceutical education.

Tinctura Ferri Citro-Chloridi.*

BY ARTHUR H. STILES.

This is an unofficinal compound, to prepare which take of

Citric acid ..... ℥ xviij.
Bicarbonate of sodium ..... ℥ xiv.
Solution of chloride of iron ..... ℥ xij.
Water ..... ℥ ij.
Alcohol sufficient to make ..... ℥ vi.

Heat the water to the boiling point and, having dissolved in it the citric acid, add the bicarbonate of sodium in successive portions, stirring after each addition until effervescence ceases; then add the solution of iron, stirring well, and afterwards, sufficient alcohol to make the mixture measure six fluid ounces; lastly filter the solution to remove any foreign matter that may be present, and keep it in well stopped bottles.

In my first experiment, having heated the water to the boiling point and dissolved the acid, I began adding the sodium salt, but, before one-half had been added the solution took the form of a crystalline mass very hard and but slightly soluble.

Thinking that the heat had, by its continued application driven off a part of the water, in my next trial, after dissolving the acid in the heated water, I removed the solution to a mortar, then adding the bicarbonate of sodium, triturating after each addition. By so doing I obtained a solution of a syrupy consistence, having an acid taste and a very marked reaction on blue litmus, which is an acid citrate of sodium.

Then I added the solution of iron.

The reaction which occurs here is not so easily accounted for. That there is a reaction is very evident, for, before the alcohol is added, the solution obtained by the addition of the solution of iron to that of citrate of sodium is clear, but after it has been added a precipitate is thrown down, which has the appearance of, and answers the tests for chloride of sodium.

As it appears to me, the chloride of sodium is held in solution until the alcohol is added and then, owing to its comparative insolubility in the alcohol, the salt is thrown down as a precipitate.

I have since obtained the same result by reducing the acid to a powder, adding the sodium salt and water, setting the mixture aside until solution is complete, and then adding the other ingredients as before mentioned.

The completed solution is of an emerald green color, having the specific gravity 1.200, and containing the same amount of solution of chloride of iron as did the tinctura ferri chloridi of the pharmacopœia of 1870, and 1.22 parts less than that of 1880.

The advantages of this preparation are its miscibility, without discoloration or formation of precipitates, with preparations of barks, all tonics, and Fowler's solution; it has an agreeable taste, that of iron being almost obliterated, and it has no injurious effect on the teeth.

Its medical properties are identical with those of tinctura ferri chloridi. The dose is from 10 to 30 drops.

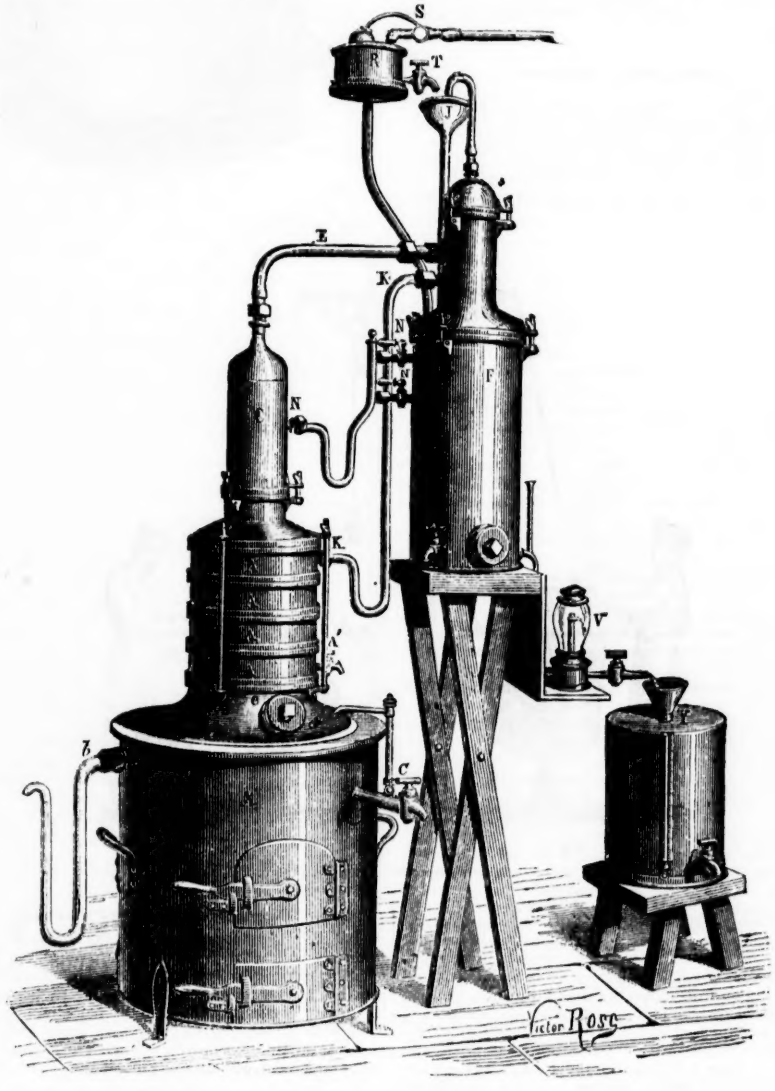
Parched Corn as a Remedy for Vomiting in Pregnancy.

Dr. T. C. Wallace, of Cambridge, N. Y., recommends Indian corn, parched quickly in a wire "popper," and slightly salted, as a very serviceable and often an efficient remedy in the vomiting of pregnancy.—*Med. and Surg. Reporter.*

* From a Thesis presented to the College of Pharmacy of the City of New York, March, 1883.

Egrot's Small Distilling Apparatus.

M. EGROT of France, whose modification of steam-kettles is described on the succeeding page, has lately made a small stationary still on the model of the larger ones manufactured by him. Chief among its advantages is the peculiar form of condensing boxes affording a wide operating surface. These boxes are divided by concentric circular discs in such way as to give the liquid a considerable distance to travel, during which it becomes completely divested of the alcohol it contains. Such action is still further increased by the presence of small tubes which divide the ascending vapors over the whole surface of the boxes and produces ebullition which hastens the distillation. In the adjoining figures, A represents the condensing boxes; B, cover of the latter; C, rectifying column; E, swan-neck; F, wine-heating condenser; K, pipe for leading the wine from the wine-heater to the condensing-boxes; N, re-entrance of the back-flow into the rectifying column; R, regulating reservoir; S, float-cock; T, cock with division-plate for regulating the flow of wine into the apparatus; V, test glass; Y, tinned-copper vessel for receiving the product on issuing from the test-glass; *a*, alembic; *b*, siphon; *c*, blow-off cock; *d*, level-indicator; *e*, screw-plug to allow of cleaning the lower part; *x* boiler-plate furnace lined with fire-brick.



Egrot's Distilling Apparatus.

The operation of the apparatus is as follows: After putting the cock, S, in communication with the reservoir containing the wine to be distilled, the cock T is opened. The liquid then flows into the funnel, J, which communicates with the wine-heater, F, fills it, and overflows through the pipe. K, into the condensing-boxes, A, each of which retains a portion The alembic is afterwards filled, and a

fire is lighted in the furnace. The contents of the alembic, *a*, soon boil, and, before long, the alcohol makes its appearance in the test glass, V, where its degree is tested by means of an alcoholometer. Finally, the cock, T, is regulated in such a way that the flow may take place in the proportion desired. These small apparatuses are easily set up, and are readily carried from one place to another. They require but little fuel, and are capable of producing brandies of from 50° to 70°, or spirits of from 75° to 90°.

The same manufacturer makes a still mounted on two wheels and capable of being drawn by a single horse, for the same purpose.—*Sci. Amer.* from *Annales Indust.*

Egrot's Steam Kettles.

M. EGROT of France, describes a system of steam-kettles intended, primarily, for cooking with a view to avoiding the unequal heating of the contents of the kettle, such as often occurs when an open fire is employed. For many pharmaceutical purposes such kettles would be equally serviceable. Somewhat similar appliances have long been used in this country, but lack the distinctive features of the ones suggested by M. Egrot. These kettles are made of cast-iron, and surrounded with jackets of plate iron to protect them from shocks. They are movable on a horizontal axis, *ff*, resting on iron supports through the intermedium of hollow trunions which serve to introduce the steam, and to give exit to condensed water. Steam enters through the tube *a*, which is pierced with a number of small holes, and the condensed water is forced into the tube *b*, by the pressure of steam in the double bottom. In the first kettles constructed, the vessels had spherical bottoms, but it was found that the level of the condensed water in the double bottom rose too rapidly, soon reached the bottom of the kettle and covered its surface, converting the lower part of the kettle into a water-bath. For this reason M. Egrot flattened the bottom of the kettle and strengthened it with transverse ribs. Between the outside jacket and the kettle is an insulating material to prevent loss of heat. Another peculiarity is the arrangement for inclining and securing the the kettle at any angle, to permit of its being emptied or cleaned, and also the counterpoise for the cover.—*Sci. Amer.* from *Annales Indust.*

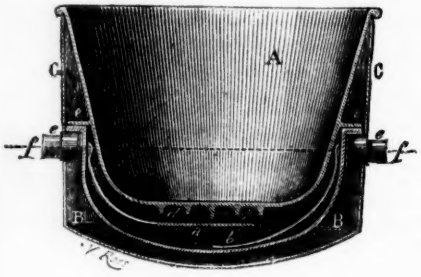


Fig. 1.

Fig. 2.

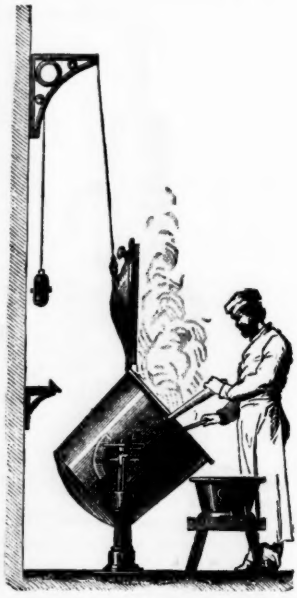


Fig. 3.

Egrot's Improved Steam-Kettles.

Digitalis in Aconite Poisoning.

DR. P. HOOPER reports, in the *Medical Times* of February 10th, four cases of aconite poisoning in persons who had taken portions of a decoction of what was supposed to be dandelion root. Following the use of emetics, tincture of digitalis, in drachm or half-drachm-doses, was used (with stimulants) in the severe cases with the effect of strengthening the heart's action. The digitalis appeared to act well as an antidote to the aconite.

Action of Digitalin on the Heart.

EXPERIMENTS made on cold-blooded animals by Drs. J. H. Donaldson and M. Warfield in the Johns Hopkins University showed, among other facts, that a large amount given in several hours had much less effect than a smaller amount given in a few minutes, and that the theory that digitalis has a cumulative action lacks experimental confirmation.—*N. Y. Med. Jour.*

Manufacture of Tartaric Acid.

In this country, tartaric acid is hardly manufactured for its own sake, but its preparation is unavoidably attached to the manufacture of cream of tartar. Here the starting-points for tartaric acid are sablons, waste liquids, and residues of different kinds, which render an analytical control troublesome, so that, partly because of great dilution, the raw material is treated more or less empirically, after the known and often described methods *† with chalk and chloride of calcium or gypsum.

Abroad, the manufacture of tartaric acid is not everywhere a mere appendix to cream of tartar manufacturing, but forms an independent branch of manufacture. In such cases the raw material consists either of argols or of dry sablons, or of lees

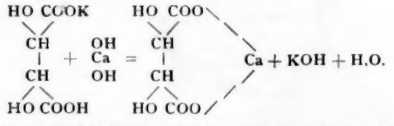
A careful analytical test has to be made before treating either of these mother-substances, and the manufacture has to be carried on with the greatest care, in order to avoid loss.

Until very recently, these tartaric acid factories worked generally after the old plan, as indicated above, viz.: treatment with chalk and chloride of calcium or gypsum. But it has to be recorded, and I will briefly do so in the following pages, that a very neat and new patented process, which, according to my own experience, is commendable, is now also in use.

This process is based on the decomposition of the mother-substances, as named above, by slaked lime, instead of chalk. This preparation has been hidden in the European patent ‡§ under the heading, "methods of obtaining the potassium in the form of hydrate, while making tartaric acid out of argols."

This heading is practically speaking untrue, because, as we shall see later on, the potassium is not finally gained as hydrate, though this is in course of treatment formed, and then transformed into sulphate or chloride.

The chemical process which takes place in decomposing the bitartrate of potash in any mother-substance into tartrate of lime, by means of slaked lime, is very simply conveyed through the following equation:



The practical difficulty which stood for so long a time in the way of realizing this decomposition for manufacturing purposes was the difficulty of making the products of decomposition easily filterable.

This the patentees have really overcome, and the method of working is smooth, and goes like clock-work.

Slaked lime, freed from coarse pieces, is taken, in necessary quantities, and a milk, not too thin, prepared therefrom.

This is heated to boiling, and argols, etc., in necessary quantity, are very gradually, and in a state of finest powder, introduced into the boiling mass.

The charging finished, boiling has to continue for two hours, the condensing steam being enough to keep the mixture in a concentrated form.

Hydrate of potash and neutral tartrate of lime are formed in this way. The nitrogenous organic impurities of the raw materials are, by the combined action on them of lime and hydrate of potash, decomposed so as to form ammonia gas, which is volatilized with the steam.

Boiling done, which takes place in an iron tank, the mixture is diluted by enough cold water, and then the potash is neutralized by either muriatic or sulphuric acid. The process is finished with the help of litmus paper.

Here the ammoniacal exhalations are to be considered, so as not to disturb the reaction. The decomposition, as described above, takes place under constant stirring by means of an iron stirrer run by machinery.

After the formation of either chloride or sulphate of potash, the mass is still more diluted with cold water, and stands best over night, stirring going on continously, filtration then taking place the next morning. Here filter presses are used to great advantage.

It is advisable not to use too high pressure, so as to get a soft cake, which can more easily be washed out, in order to get rid of the mineral potash salts.

These latter are either boiled down, as long as the strength of the solution makes it pay, or they might* be treated with chloride of lime (bleaching powder), and thus transformed into chlorate of potash, which I advise manufacturers to try. The cakes of brown tartrate of lime, which begin to exhale putrid odors by standing too long in a warm place (in summer time six hours' standing often will show this result), have speedily to be decomposed by sulphuric acid. This decomposition takes place in a wooden, lead-lined thank with heavy wooden stirrer moved by steam.

The decomposition takes place in the cold, and its completion is determined easily by methyl violet test paper. †

No analysis has to be made here, if good paper is at hand, which allows one to guide the reaction, so as to get the necessary point or the excess of sulphuric acid wished for.

The brown solution of tartaric acid is filtered through filter-presses into wooden receivers. It is not advisable to evaporate this acid down to the point of crystallization, because it contains impurities enough to spoil the mother-liquors at a too early stage. If the course of manufacturing demands a readier transformation of raw material into money, this crude acid solution might be concentrated in the leaden pans to the right concentration for crystallizing or for precipitation by the stirring process, which we shall deal with on another page.

It is preferable to reprecipitate this acid as tartrate of lime, finishing the reaction with chalk, and using litmus test paper.

The tartrate of lime thus obtained is filtered on a vacuum filter or by centrifugal power. Of course, washing takes place, though slightly. This tartrate of lime is crystalline, light greenish-yellow, and keeps perfectly well for any length of time required without decomposing.

It is decomposed in an apparatus similar to the one used for decomposition of the first brown tartrate of lime, by sulphuric acid, in the cold, and the reaction finished with the aid of methyl violet test paper. The filtration of the very white gypsum thus obtained cannot be done through filter presses, but has to take place on a vacuum filter, very thorough washing being required.

The tartaric acid solution thus obtained ought to stand between 12° and 14° B. It is ejected into the lead pans, evaporated at 80° C. to the necessary density by which dissolved gypsum is precipitated, run into the crystallizing boxes, and let stand for crystallization. The crop of brown crystals is redissolved to a liquid of the density 25° B., and treated with bone black which has been purified by muriatic acid (so as not to leave a trace of phosphates) at a medium temperature and under stirring.

The discolored liquid is run through a filter-press, and thence into special lead pans. It is evaporated down to about 39° to 40° B., and run into lead boxes for crystallization.

The crystallization being a comparatively slow process, this liquid may be run into a proper tank with stirrer, stirred for several hours, thus yielding a crop of small crystals right away.

Either crystals are washed and dried in centrifugals by using steam for washing.

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* *Bericht über die Entwickelung der Chem. Industrie:* A. W. Hofmann, vol. ii., page 418, etc.

† *Journal of the Society of Arts;* Robert Warington, vol. xxiv., No. 1217, page 366, etc.

‡ *Die Chemische Industrie,* Dr. Emil Jacobsen; 1879, pages 86 and 238.

§ *Berichte d. Deutschen Chemischen Gesellschaft:* 1879, page 1,566.

* In case chloride of potassium was formed.

† *Journal of the American Chemical Society,* T. O'Connor Sloane, vol. iv., nos. 1-4, page 31, etc.

The liquid running off from the first crystallization yields after evaporation another crop of white crystals. Then it becomes a brown mother liquor.

The mother liquors of the brown crystals can, under careful attention, be carried along through the sixth or seventh crystallization. Then the predomination of sulphuric acid and impurities does not allow further crystallization.

The mother liquors at that stage are diluted to a proper density, the greater part of the sulphuric acid removed by the addition of slaked lime milk, and the filtered liquid has then principally to be freed from iron salts and from phosphate of alumina.

The iron is easily expelled by taking care to keep it in the form corresponding to the protoxide, the presence of the phosphate of alumina making it necessary to treat the liquids boiling with milk of lime, thus precipitating phosphate of alumina, and forming an acid tartrate of lime which is soluble. It has to be filtered hot, and is decomposed by an addition of sulphuric acid, thus yielding very pure solution of tartaric acid.

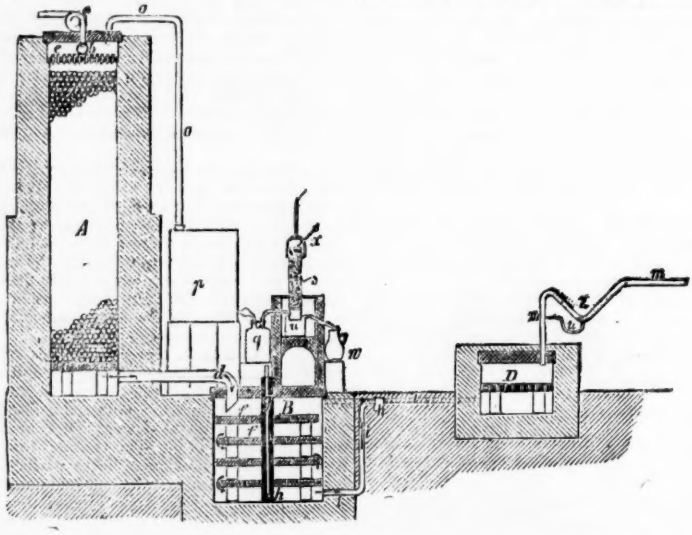
If a transformation of the acid thus gained into bitartrate of potash should be wished for, which hardly would be prudent, the simplest way of arriving at this end would be the following:

The solution is divided into two equal parts, one-half saturated by caustic or carbonate of potash, so as to form a neutral tartrate of potash, and then the other half added for the precipitation of the bitartrate.—L. H. FRIEDBURG, PH.D., in *Journ. of Amer. Chem. Soc.*, iv., Dec., 1882.

Apparatus for the Continuous Manufacture of Bromine.

THE hot bromine-lye is conducted by the pipe *a* into an earthen-ware drum *b*, occupying the full width of the tower *A*, and provided with obliquely downward-directed openings. Below the drum is a plate of sand-stone into which are cemented small slightly conical clay-tubes. The lye is thus evenly distributed upon the glass-balls with which the tower is filled. Chlorine gas is conducted from the generators by the pipe *m*, and the supply is regulated by a bent glass-tube *z*. A rubber-tube connects the bend of the latter with the perpendicular, descending arm of *m*, the object of which arrangement is to permit the water condensing in *z* to flow off into the wash-apparatus *D*. Whenever the current of chlorine gas becomes stronger, more water is driven out through *n*, and the force of the current may be estimated by the size of the passage left for the gas in the bend. If it is desired to interrupt the current of the gas, the tube *u* is detached from the side-arm, and enough water poured into it, until the bend at *z* is completely filled. Whatever gas passes into the wash-apparatus, is conveyed from there, through the pipe *l*, the apparatus *B*, and the pipe *d*, into the tower.

The lye collects under the perforated bottom *c*, and flows through *d* into *B*, where the dissolved chlorine and bromine are expelled by steam. The lye is made to flow over alternate shelves of sand-stone *f*, and passes finally through *i* into the waste *k*. Steam enters through the stone-pipe *g*, *h*, and from there, passing through holes in the shelves of sand-stone, permeates the lye. The latter, constantly boiling, fills the apparatus *B* up to the pipe *d*, the obliquely cut end of which leaves barely room enough for the passage of the current of gas. The vapors of bromine which ascend in the tower are conducted through the earthen-ware pipe *o* to the earthen-ware worm in the condenser *p*, and the liquid bromine passes into the bottle *q*.



Bromine Apparatus.

Any uncondensed vapors pass into the earthen ware tube *s*, which dips into a vessel from which the excess of liquid flows off automatically without exposing the lower end of *s*. The tube *s* is filled with iron filings which are kept moist by a current of water conveyed through *x*. All chlorine and bromine here combines with iron, and the resulting salts being dissolved in the water, are constantly removed. Vapor of water and air find their exit through an opening on the top of the table *s*.

The described apparatus is patented by the Vereinigte Chemische Fabriken, Actien-Gesellschaft in Leopoldshall, Germany (German Patent 19,780, Feb. 2d, 1882).—After *Chemiker Zeitung*.

Falsification of Quinine.

IT has lately been discovered by the authorities of the hospitals of Paris, that for some time past the boxes of quinine supplied to public institutions have contained quinine at the orifice and centre of the boxes, while the remainder consisted of sulphate of cinchonine or sulphate of cinchonidine. At first the French papers accused the German and Italian manufacturers of the fraud. But it was soon shown that a patriotic Frenchman was at the bottom of it. The papers were compelled to retract their statements.

Gelsemine and some of its Crystalline Salts.*

MR. A. W. GERARD has lately succeeded in preparing pure gelsemine in a crystalline form, as well as some of its salts, his method being as follows:

Twelve kilograms of well powdered Gelsemium root were exhausted with alcohol, which left, after extraction, 1703 grams of soft extract. The extract, on resting, separated into two strata.

The superstratum, green in color and having the appearance of an oleo-resin, was removed and found to be practically insoluble in water; it was well shaken with dilute hydrochloric acid to remove traces of adhering alkaloid, and the acid solution mixed with the substratum. The substratum, containing the alkaloid, was diluted with water until it ceased to precipitate resin, and left a clear bright-brown solution, which was evaporated at a temperature below 60° C., treated with ammonia in excess and thoroughly washed with ether. The ether solution, now containing the gelsemine and beautifully fluorescent from the presence of gelseminic acid, was decanted and exposed a short time to allow excess of ammonia to escape. Hydrochloric acid was next added in fractions with agitation until the fluorescence was destroyed, a certain indication that the whole of the alkaloid had been removed from the ether. The hydrochloride of gelsemine had now separated from the ether, forming a layer of pale-yellow amorphous precipitate, which upon separation was subjected to several reconversions, until the last traces of color and fluorescence had disappeared, the product being 20.2 grams of perfectly white hydrochloride of gelsemine. It may here be mentioned that the pure alkaloid obtained from the hydrochloride by alkali, and chloroform or ether, holds its solvents tenaciously, and requires the heat of a water-bath to effectually remove them. During their removal the gelsemine swells into vesicles which, on cooling, can be easily powdered.

Properties of Gelsemine.—It is a brittle transparent solid, crystallizing with difficulty from alcohol. Boiling water sparingly dissolves it, the solution on cooling becoming faintly turbid from separation of gelsemine. It softens at 38° C. and becomes fused at 45° C. Heated on platinum it ignites, burning with an orange-yellow flame and leaving no trace of residue. Solutions of its salts have a distinctly but not powerfully bitter taste, and give with potash or ammonia white precipitates soluble in excess. If the solution containing excess of ammonia be exposed to the air, as the ammonia is eliminated the gelsemine separates in granular crystals. The pure base gives no color reaction with strong nitric acid, and the mixture is scarcely changed in color by heating. Strong sulphuric acid has no apparent reaction upon it; but if to the mixture a little manganic oxide be added and rubbed with a glass rod, a deep crimson red is obtained, passing to green. This reaction is exceedingly delicate, and can be easily shown by dissolving 1 milligram of pure gelsemine in 10,000 milligrams of strong sulphuric acid, then adding a few milligrams of manganic oxide. It can be even demonstrated with a solution 1 in 100,000. If the preceding reaction is performed upon the pure alkaloid, the color is sufficiently intense to cause it to be mistaken for strychnia; but if a parallel experiment be carried on with strychnia, the two alkaloids cannot be mistaken, for the strychnia gives an intense purple, passing to red. Picric acid gives a yellow crystalline precipitate; gold chloride, a yellow amorphous precipitate, soluble in boiling water, separating on cooling, partly in crystals. Platinic chloride gives a yellow precipitate, soluble on boiling.

The following salts were prepared and obtained in crystals: hydrochloride, hydrobromide, sulphate and nitrate. The hydrochloride is a moderately soluble salt, separating from water as an apparently amorphous powder, consisting really of small granular crystals. It is sparingly soluble in cold, more soluble in hot alcohol; from the latter it separates slowly in prismatic crystals. The hydrobromide crystallizes more readily from water and alcohol than the hydrochloride, forming prisms. The sulphate and nitrate were freely soluble in water and alcohol, and crystallized indifferently on spontaneous evaporation.

REACTIONS ASCRIBED TO GELSEMINE.

	Gerrard.	Sonnenschein.	Wormley.
Strong nitric acid . . .	No reaction.	Yellow-green color.	Brownish-green, changing to deep green color.
Strong sulphuric acid . .	No reaction.	Yellow-green, passing to reddish-brown color and upon heating to dark red.	Dissolves with a red or brown color which after a time assumes a pinkish hue. Warmed it acquires a chocolate or violet color.
Sulphuric acid and manganic oxide.	Gives a damask-red color, passing to green or blue.		
Strong sulphuric acid, and bichromate of potash in crystal.	A crimson evanescent redness passing to a green color.	A cherry-red color, changing a little to violet, which soon forms a bluish-green spot.	Reddish-purple streaks along the path of the crystal.
Gold chloride	Yellow precipitate, soluble when heated.	Yellow precipitate, not altered by heat.	
Platinum chloride . . .	Amorphous yellow precipitate, soluble in water on heating.	Amorphous yellow precipitate, soluble in water on heating.	
Potash mercuric iodide . .	White precipitate, which dissolves on heating and separates on cooling.	A white precipitate, which dissolves on heating and separates on cooling.	

Since the alkaloid I obtained differed in important respects from that experimented upon by others, and was evidently in a higher state of purity, it was thought desirable to submit it and some of its compounds to combustion.

Three determinations of nitrogen were made by the absolute method, from the pure alkaloid, and the following percentages by weight calculated:—7, 7.3 and 6.9.

Four combustions with cupric oxide and copper of quantities varying from .100 to .200 gram gave the following percentages of carbon and hydrogen:

	C.	H.
1.	70.4	7.2
2.	70.1	7.3
3.	70.3	6.9
4.	70.45	7.3

Taking the oxygen by difference, these figures admit the construction of the following formula for gelsemine,

*Pharm. Journ. and Trans., Feb. 10th, 1883.

$C_{12}H_{14}NO_2$, for which theory requires 70.6 C, 6.86 H, 6.86 N, and 15.68 O.

The chlorine was estimated from the hydrochloride, and and 8.1 per cent found, showing the composition of this salt to be $(C_{12}H_{14}NO_2)_2HCl$, which requires 7.96 per cent chlorine. In like manner, the hydrobromide was found to yield 16.21 per cent bromine $=(C_{12}H_{14}NO_2)_2HBr$, which requires 16.3 per cent.

The platinum and gold salts of the alkaloid were purified and burnt; the former gave 16.7 per cent platinum, the latter 36.9 per cent gold, pointing to a composition for the former of

$$(C_{12}H_{14}NO_2)_4(HCl)_2PtCl_4,$$

for the latter $(C_{12}H_{14}NO_2)_2HCl(AuCl_3)_2$, these requiring respectively 16.4 platinum and 37.4 gold.

The main features of this as differing from previous researches show—(1) that the alkaloid gelsemine can be obtained in a state of purity as a crystalline colorless solid, forming crystalline salts with acids, and giving no color reactions with nitric or sulphuric acids; (2) that the pure base has the formula $C_{12}H_{14}NO_2$, thus differing greatly from the formula obtained by Sonnenschein, who, it is certain, must have used an impure substance, as shown by the color reactions his alkaloid gave with nitric and sulphuric acids.

Forensic Note.—In cases of poisoning by gelseminum, where the resin, extract, or tincture have been employed, no difficulty need be experienced in detecting its presence, all these preparations containing gelseminic acid, which imparts its powerful blue fluorescence to any mixture on the addition of an alkali. When the alkaloid gelsemine has to be sought, its isolation can be effected by any of the methods followed for strychnine, especially taking advantage of the fact that gelsemine, like strychnine, is not destroyed by strong sulphuric acid. After isolation, and showing its alkaline and alkaloidal nature, its most special reaction would be the red color with sulphuric acid and manganic oxide. These characters alone should scarcely be deemed sufficient evidence of its presence. In addition, its physiological action should be sought and demonstrated; if this be obtained it may be concluded gelsemine is present.

Detection of Adulterations of Iodine.

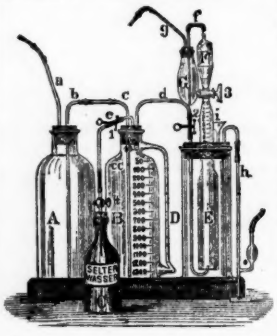
BESIDES the adulterants of iodine mentioned in the Pharmacopœia, viz., moisture, chloride of iodine, cyanide of iodine, chlorine and bromine, which are liable to be present through some fault in the process of manufacture, there may be found certain substances which have been added wilfully, such as powdered coal and charcoal, sand, powdered slate, peroxide of manganese, sulphide of lead, plumbago, iron scale, iodide of sulphur, chloride of magnesium, or cream of tartar. According to the *Chemist's Journal* of Feb. 16th, "All these substances may be detected by sublimation, dissolving the iodine out with boiling alcohol or ether, or by a weak solution of caustic potash or iodide of potassium. The amount of adulteration may, of course, be estimated by weighing the sample first, and then the residue, if any. If a solution of caustic potash is used it ought to be very dilute, otherwise the sparingly soluble iodate of potassium which is formed will be precipitated, and falsify the result. Acar recommends ether in preference to alcohol or caustic potash solution. Ether not only dissolves the iodine very rapidly, and if a few drops of water have been added to the sample beforehand the ethereal solution of iodine floats on the top, while the impurities fall to the bottom of the layer of water which remains colorless. With alcohol, there being no such separation, the deep brown tint of the solution interferes with the detection of the impurities that may be present. For such impurities as powdered slate, charcoal, or sulphide of lead, Lepage recommends that the iodine be dissolved in strong sulphurous acid, the result being a mixture of sulphuric and hydriodic acids. Where the adulterant is soluble, like chloride of magnesium or calcium, the iodine should be washed and the washings heated gently to drive off the dissolved iodine, and the solution tested with nitrate of silver for *chlorine*, phosphate of sodium and ammonium for *magnesium*, and oxalate of ammonium for *calcium*. *Tartrate of potassium* may be readily detected by its insolubility in alcohol.

[Most of the impurities mentioned in the preceding are not liable to occur in resublimed iodine. Crude iodine, however, has been known to contain them.—ED. N. R.]

Apparatus for Determining the Presence of Foreign Gases or Air in Carbonated Liquids.

IT has happened not unfrequently that carbonated beverages, artificial mineral waters, etc., have been put on the market which were saturated with air or with impure carbonic acid gas. This may be detected by using the below-described apparatus:

A and *B* are liter-flasks which are connected by the tubes *b* and *c*, reaching to the bottom of their respective flasks. Through the cork in *A* passes another tube (*a*), which serves for blowing. The second flask, *B*, is graduated from above downwards, in divisions at every 100 cubic centimeters and to facilitate the reading off, is provided with a gauge-tube graduated in the same manner. A tube *d*, which serves to convey the gas, connects *B* with *D* and terminates with an upturned end under the bell-jar *E*. The vessel *D* is closed with a flat cork, through which pass, besides the tube *d*, the upper part of the bell-glass, which is graduated in cubic centimeters; also a funnel *i*, for filling, and a siphon tube, *h*, for emptying the vessel. The upper part of the bell-glass, beyond the graduated portion, is provided with a stopper, above which it expands to a sort of bulb, *F*, which is connected with a small flask, *G*. The latter, finally, carries a small tube, *g*, used for blowing.



Apparatus for testing gases in liquids.

When the apparatus is to be used, the flask *A* is filled to one-tenth and *B* completely with a ten per cent solution of sulphate of magnesium or chloride of calcium; the vessel *D* is filled half or two-thirds full of a five to ten per cent solution of caustic soda.

The vessel containing the carbonic acid gas or the carbonated liquid is now connected in any suitable manner (for instance, by means of a champagne faucet) with the flask *B* by means of the tube *e*, which carries a pinch-cock (1).

The air or gas being admitted, it passes into *B*, from where it drives a corresponding portion of the contents into flask *A*, and the volume of the gas may then be read off on the scale. Next, while faucet 3 is open, the caustic solution in *D* is made, by suction at *g*, to rise in the bell-glass until the whole of it (including *F*) and the small flask *g* are filled, whereupon faucet No. 3 is closed again. The next object is to drive the gas contained in the second flask *B* over into the bell-glass, where all the carbonic acid gas will be absorbed by the soda-solution. For this purpose the pinch-cock 2 is opened (No. 1 being closed), and air is blown through *a* into the first flask *A*. This causes the liquid to flow back to *B*, and therefore the gas in the latter to pass over into *E*. Faucet 3 is now slightly opened, so as to cause a slow stream of lye to flow from *G* and *F* down the inner walls of the bell-glass, whereby the carbonic acid gas is quickly absorbed. Any other gas or any air present accumulates in *F*, and may there be read off in cubic centimeters.

The apparatus may be obtained from Alt, Eberhardt & Jäger, in Ilmenau, Thuringia (Germany).—After *Chemiker Zeitung*, 1882, No. 72.

The Cultivation of Cassia in China.

THERE has always been a good deal of doubt as to the exact botanical origin of *Cassia lignea*. Flückiger and Hanbury, in their *Pharmacographia*, state that, though not absolutely certain, Chinese *Cassia lignia* is in all probability afforded by *Cinnamomum Cassia* Blume. With a view to clear up this subject, Mr. Charles Ford, the Superintendent of the Botanical Gardens, Hong Kong, was specially deputed last spring to visit the cassia districts and to report on the subject. Mr. Ford proceeded to the cassia districts up the West River—Sai Kong—in the month of May last. He says in his report:—"In addition to the information gained, I was enabled to obtain and bring back to Hong Kong about 1,700 young cassia plants from the districts of Loting, Taiwu and Lukpo, a large number of which will be available for distribution to other colonies for the trial or establishment of them in suitable places, where it might be expedient for the cultivation of cassia to be attempted.

Like most of the Lauraceæ to which the cassia belongs, the seeds must be sown very shortly after they mature, or otherwise they rapidly lose their vitality. The season for sowing the seeds having passed a little before Mr. Ford's arrival in the districts, he was consequently not able to procure fresh seeds except a very small quantity of a late-maturing batch which were sown in a box the same day they were obtained. They began to germinate at once, and from them a small lot of healthy plants have arisen.

The period of Mr. Ford's visit was timed that he might be in the cassia districts when the trees were flowering, so that he might obtain authentic specimens for the certain identification of the species, and that he might also witness the operation of obtaining and preparing the bark. The tree which is undoubtedly that of *Cinnamomum Cassia* Blume, is known as the "Yuk Qwai She," and is described as a medium-sized stiff ornamental tree. The largest seen in the cassia districts was about four miles south-west of To Shing, and measured forty feet high, with a trunk about three feet in circumference, and said to be fifty years old. The bark on old trees is about half an inch thick, of a burnt color, and mostly covered with lichens. On younger trees and branches the bark is much thinner and lighter in color. The bark, leaves and incipient fruits ("buds" of commerce) taste strongly of cinnamon, the strongest taste being the "buds," next the leaf peduncles, then the bark and lastly the leaves. The older the bark the more pungent the taste.

All the trees seen in the districts of Taiwu, Loting and Lukpo, and intermediate localities, were *Cinnamomum Cassia*. Nor were there apparently any distinct varieties of the species in cultivation. The cultivators and other natives were frequently interrogated as to whether they knew or had heard of any other tree which yielded the products under notice, and the invariable reply was that there was no other kind. There is, therefore, no doubt but that writers who named other kinds as cassia-yielding trees of China have been mistaken or misinformed on the subject. One writer alludes to a tree in terms which partly correspond to the description of *Machilus velutina* Champ, another tree belonging to the Lauraceæ and indigenous to South China. It is quite possible that this tree may have been supposed by a casual observer to yield cassia bark, because it is sometimes grown in plantations intermixed with those of *Cinnamomum Cassia*. The trees are reared, planted and treated in precisely the same manner as the cassia trees, but the bark is required for a very different use, viz., to supply a glutinous extract which is used to stick together powdered cassia bark and sandal wood (*Santalum album*) to form the joss-sticks used for incense. *Cinnamomum Burmanni*, which it has been supposed may probably yield "in part the bark of the Canton market," does not, Mr. Ford says he feels sure, supply cassia bark to any extent. Nowhere did he see it cultivated, nor was it seen growing wild in any but very small quantities, and these wild trees bore no signs of having been cut as had the cassia trees; many natives were asked if it ever was used, but with one exception all denied that it afforded any cassia bark. The one exception was an old woman who was cultivating a field of Indian corn close to a few small trees of *Cinnamomum Burmanni*, and who said that its bark was sometimes, but rarely used to adulterate the true cassia bark.

Cinnamomum Cassia was not met with anywhere in a wild state, nor could any native be found who knew where it did grow wild. Dr. E. Bretschneider* says, in his "Notes on some Botanical Questions," that Dr. Thorel states that it grows in a wild state in the forests of Cochin China, about 19° North latitude.

Under the head of "Localities of Cultivation," Mr. Ford says there are three chief districts where the cassia is cultivated, namely, Taiwu, in latitude 23° 34′ N., and longitude 110° 18′ E., in the Kwangsi province; Lukpo, in latitude 23° 6′ N. and longitude 112° 24′ E.; and Loting, in latitude 22° 52′ N., and longitude 110° 8′ E., both in the Kwangtung province. These are the market towns of the districts; but the cassia is cultivated over a large area of country stretching to considerable distance from the towns, the extent of which could not be ascertained, owing to the unreliable account given by the different people questioned, who either had very vague notions of area or were disinclined, as they usually are, to give information to foreigners. Taiwu is about four or five miles from the West River, and is reached by a pleasant walk, leading over a plain; but the nearest cassia plantations are situated about twenty-five or thirty miles further, in a southern or south-westerly direction, to which there is no communication by river. Taiwu is about 180 miles west of Canton. The Taiwu people said the area of cultivation was not increasing.

The next most important, if not *the most* important, or at least tending in that direction, district, is the Loting one, commencing at about eight or nine miles' distance from the city of Loting. After leaving the North-West River, about eighty miles of the Loting River—the Nam Kong—has to be traversed before reaching the city, and from there the distance to the plantations has to be accomplished overland. One of the largest cultivators said that in this district there were about 1,000,000 mans (about 52,600 English acres) under cultivation, and that the area was greatly extending every year. The cultivation of cassia has been carried on here only about twenty-five years, namely, since the Tai Ping Rebellion, at which time, for the preservation of the plants and protection of them from destruction by the rebels, they were transferred from a district further south, at which, it is reported, the cultivation of cassia was abandoned when it was commenced at Loting.

The next district is that of Lukpo, which is much less important than the other two. The city of Lukpo is situated on the north bank of the West River, and the plantations are about fifty miles between the nearest one and the city. In addition to these plantations, there are several small localities near the West River at intermediate places where small patches of cassia are grown, and as the quan-

* From Dr. E. Bretschneider's paper on "Early European Researches into the Flora of China." (*Journal of the North China Branch of the Royal Asiatic Society*, 1880, New Ser., No xv., pp. 1–19) we quote the following:

Alv. Semedo, who wrote a work on China in 1633—which was published at Rome in 1643 under the title *Relatione della Grande Monarchia della Cina*—relates that "Belle Isle" (*i. e.* Formosa) produces, among other drugs, cinnamon, which is found in the mountains. Dr. Bretschneider remarks to this, that Chinese Cinnamon (*Cinnomomum Cassia* Bl. and other species) is known to grow in the province of Kuangsi and Kui chou; but that he is not aware that modern travellers have noticed it in Formosa.

Martini's Novus Atlas Sinensis (published in Vienna 1655) mentions that the city of "Chin cheu," of the province of Quang si, produces most excellent cinnamon, differing from Ceylon cinnamon only by being of a more fragrant odor, and a greater pungency while placed on the tongue.—Bretschneider here remarks: "*Cinnamomum Cassia* Bl., *Cinnamomum Burmanni* Bl., and perhaps other species furnish the cassia bark of China. By "Chin cheu" Martini means Sin chou fu. In the same prefecture, near the town of Taiwu, according to Mr. Moss (*Narrative of an Exploration of the West River*, 1879), the best cassia bark is produced.

Du Halde, in his *Description de l'Empire de la Chine*, also mentions cassia bark (*cannelle Chinoise*) as being a product of the province of Quangsi.

tities of bark obtained are too small to send to market towns, it is brought off by small boats and sold to larger boats, which carry produce down the river.

About six miles south-west of the small town of To Shing, which is situated on the southern bank of the river, about twenty-five miles above the confluence of the Loting and West Rivers, there are some plantations, from which, however, no bark has been obtained for two years, and no new plantations made for ten, because the low prices which can now be obtained for the bark do not leave any profit to the producers. This, Mr. Ford says, was the only instance which came to his knowledge of the decrease of the trade in cassia production, although it is said that the Java Cassia trade, in consequence of the lower prices at which cassia can there be produced, is cutting out and crippling the China trade.

With regard to the propagation of the plants, in consequence of the seeds retaining their germinating power for a very short time only after they have arrived at maturity, the sites and soil to be used for the reception of the seeds must be in readiness when they begin to ripen, which is said to be in January.

The seeds, after they are gathered, are kept in small quantities together or spread out thinly on a floor or shelf for a week or ten days in a shady place; if placed in large quantities together, they would ferment, and thus be injured or destroyed. They may be sown from the beginning of February to the beginning of April, as they ripen, at about three inches apart, in drills two inches deep and one foot apart, in beds prepared in the open air, each bed about six feet wide and any desired length. The beds are raised about nine inches above the surrounding ground, and consist of good friable soil without fresh manure, but containing a large amount of humus. The seeds begin to germinate at once, and in about three weeks the seedlings appear above ground. Besides being supplied with sufficient water in dry weather to keep the soil moist, and being kept free from weeds, they require no particular attention until transplanted into their permanent positions in the plantations. Plantations exist on situations with all aspects, no preference being given to any one before another. They are at altitudes of from about three hundred to one thousand feet above sea level, and on slopes of from 50° to 30°. Plantations were nowhere seen on level ground; in fact, so little level ground exist in the localities of cassia cultivation that, even if wanted, it could not be obtained. The very small portions of level ground that there are in the bottoms of small valleys are used for the cultivation of rice and vegetables. Land carrying the thickest vegetation of grass and ferns—*Gleichenia dichotoma* chiefly—is selected. Naturally, the soil contains a fair quantity of humus for a depth of from six inches to a foot, but the accumulation of vegetable matter is not more than to give the soil a light-brown color. If very dense, the vegetation is burnt. The soil is dug to a depth of about one foot, and placed in small terraces or steps three feet apart, and of a width varying according to the steepness of the hills; frequently they are not more, sometimes even less, than eighteen inches wide. No manure is used either when the ground is prepared or subsequently. The plants are transferred from the seed beds to their permanent sites in the plantations during the months of March, April, and May. One and two year old trees are used, the former being preferred. They are lifted from the seed beds without balls of earth, and a portion of the long tap root—which in one-year-old plants is about a foot long—as well as all the leaves, except the two top ones, cut off. They are then planted at three feet apart on the newly-prepared ground. At the same time, when the new plantations are made, gaps, caused by the deaths of trees in the older plantations, are filled up with young plants.

When the trees are about six years old, the first crop of bark is obtained. The season for barking commences in March, and continues till the end of May, after which the natives say the bark loses its aroma, and is therefore not removed from the trees. The branches, which are about an inch thick, being cut to within a few inches of the ground, are carried to houses or sheds in the vicinity of the plantation. All the small twigs and leaves being cleared off, a large-bladed knife, with the cutting edge something like the end of a budding-knife, is used to make two longitudinal slits and three or four incisions at sixteen inches apart around the circumference through the bark, which is then loosened by passing underneath it a kind of slightly curved horn knife with the two edges slightly sharpened. Pieces of bark sixteen inches long and half the circumference are thus obtained. The bark, after its removal, and while it is still moist with sap, is then laid with the concave side downwards, and a small plane, made somewhat in the form of a spoke-shave, passed over it, by which the epidermis is removed. After this operation, the bark is left to dry for about twenty four hours, and then tied up in bundles about eighteen inches in diameter, and sent to the merchant houses in the market towns. The leaves which are cleared from the branches that are barked are carefully preserved and dried, and afford, by distillation, cassia oil. A large quantity of leaves are sent to Canton, where, it seems, the operation of distilling is performed. The twigs are removed from the cut branches at the same time as the leaves, and they are a marketable commodity for native use.

The so-called cassia buds of commerce are the immature fruits. They are gathered when about one-eighth grown. Buds, and the seeds which are annually required for sowing are obtained from trees ten years old and upwards that are left standing at about 50 and 100 feet apart amongst the trees that are cut down every six years for their bark. These seed-bearing trees are not cut down unless there is a demand for the very thick back on their trunks, when some of the trees which can be conveniently spared are sacrificed. The information elicited on the subject of the amount of yield was somewhat conflicting, but probably something near the mark is that the yield of the Loting district for 1882 would be 50,000 piculs, one picul equalling 133⅓ lbs., and that for the Taiwu district 32,000 piculs, which shows that, contrary to what was previously supposed, the Loting district furnishes the largest quantity, or, which is perhaps more likely, the latter district is outstripping the Taiwu district, since the industry has at a comparatively recent date been transferred to that place, and at the time when the last estimate was given, twelve years ago, the industry had not had time to develop to its full capabilities. The yield per acre is probably about 11 piculs, which is sold by producees for about 1.70 dols., per picul, *i. e.*, 18.70 dols. per acre, which as the bark is only obtained once in six years gives but 3.11 dols. per annum per acre for the bark; but, in addition to this, a little must be added for the income from the sale of leaves and "buds," the former, however, would be very small, as they only realize about 20 cents per picul when dry; the latter fetch 15 dols. per picul, and are a yearly income, but no satisfactory information could be obtained as to the production per acre.

It has been thought that the yield is gradually decreasing in consequence of the prices of late years showing no profit to producers. This assertion, however, is scarcely borne out by facts, as, although the yield in 1881 was much less than in 1879, yet it compares favorably which the last ten years; 1879 seems to have been the best year on record, over 100,000 piculs have been exported. Although the yield does not thus seem to be decreasing, yet the prices have fallen very much. In 1875, they fell to less than one-half what they had been for the previous thirteen years, and they have not since recovered, but seem rather to be a little decreasing. In spite of these bad times the producers continue to make large annual new plantations, which would seem to indicate that there is still some profit to be made.—*The Monthly Magazine.*

The difference between a druggist and a farm hand is said by our exchanges to be that one is a pharmacist and the other a farm-assist.

A Burette for Liquids Which Act Upon India Rubber.

MR. KARL ABRAHAM describes, in the *Zeitschrift für Analytische Chemie* (1883, p. 28), an improved burette, which he has used for some time and which he considers superior to that of Gay-Lussac and its modifications. It consists of a graduated cylinder, *A*, and a narrow, siphon-like bent glass tube, *B*, which is fastened to the cylinder by means of the ring (see Fig. 2) in such a way that it may be raised or lowered, together with the ring, with but slight friction. The drawn-out end of the outer arm projects about 5 *cm.* (2 inches) from the cylinder, and has an orifice of about 1 millimeter diameter. The inner arm has in its upper part a short offset, nearly or entirely coinciding with the axis of the cylinder. If the siphon is filled with liquid and the inner arm immersed, the liquid flows out at *D* at a rate proportional to the depth of immersion,

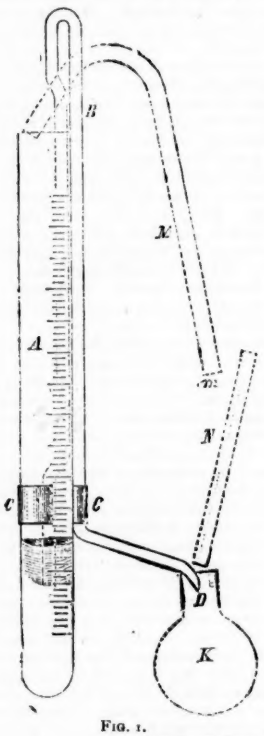


FIG. 1.

FIG. 2.

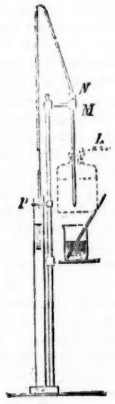


FIG. 3.

Abraham's Curette.

either in a stream or in drops, the latter separating in from one to ten seconds. On lifting the siphon out of the liquid in the burette, the flow ceases without the siphon emptying itself. The latter, however, takes place if one of the siphon-ends is more than 1 *cm.* (about ⅜ inch) higher than the other; the outer one, however, may be a trifle lower than the inner (indeed, this is an advantage), but the difference should not exceed 5 *mm.* (about $\frac{3}{16}$ inch). The siphon is filled by immersing it in the liquid contained in the burette, then introducing the end of a curved tube (*M*) into the upper end of the cylinder and, having closed the latter as completely as possible, blowing through *M*; this causes the liquid to pass over. Or, a small flask may be placed below the outer orifice (*D*), a tube (*N*) inserted, and the mouth of the flask being closed as nearly as possible, the liquid caused to pass over by suction. Some care is needed when using the latter method, though either way is simple and requires no practice.

The burette is best attached to a stand by its upper or lower part. Cylinder and siphon having been filled with the liquid, the vessel containing the solution to be titrated is held in the right hand, and the flow of the liquid regulated by raising or lowering the ring carrying the siphon with the left hand. As soon as the end of the reaction is approaching, the flow is retarded more and more until the drops fall in intervals of five to ten seconds only. In this manner it is impossible to miss the end of the reaction even by as much as a full drop. If the siphon is withdrawn quickly, it may happen that a drop remains having at the inner orifice. It is then only necessary to bring the drop again in contact with the surface of the liquid, when it will detach itself, after which the siphon is again raised. For burettes which are over 40 *cm.* (about 16 inches) long, this arrangement becomes somewhat less handy.

When using this apparatus, it is necessary to hold the vessel containing the liquor to be titrated in the hand, but this is no disadvantage, since the contents may be agitated by shaking instead of stirring.

A slightly modified arrangement is shown in Fig. 3. Here the vessel and the siphon are fixed stationary, but the cylinder is raised or lowered. The latter is held loosely by the clamp *P*, yet so that it can only move in a horizontal direction. Its upper end is closed by a perforated cork, through which the siphon enters loosely. The latter is made of glass tubing 5 millimeters in thickness, and both ends are drawn out, the inner to 2 *mm.* and the outer to 1 *mm.* bore. It is held loosely by *M*, but rather firmly by a rubber ring, *N* (slipped over *M*). The apparatus may be easily filled by immersing the outer end of the siphon deeply into a flask filled with the proper volumetric solution, and gently blowing through the tube *L* (fitted in a cork in the mouth of the flask, the siphon being pushed through a second opening in the cork). This causes the liquid to fill the siphon and the cylinder. For refilling, it is only necessary to immerse the outer end again into the flask.

This apparatus is particularly suitable for volumetric solutions which are in frequent or constant use.

Deodorized Tincture of Opium.

MR. R. ROTHER furnishes the following formula for preparing a deodorized tincture of opium based upon the theory that most volatile oils, resins and semi-resins [*sic*] are soluble in fixed oily menstrua; hence, in his opinion, should there be a tendency in any of the opium resins or odorous principles to pass into aqueous solution, the presence of a fixed, oily substance would be likely to prevent it. Vaseline was added to the heated mixture of opium and water, and spermaceti added to insure the separation of the vaseline on cooling. After cooling, simple decantation is all that is required. His formula is as follows:

Take of
- Opium, dried and powdered....2½ Troy ounces
- Vaseline,
- Spermaceti, of each.....1 Troy ounce
- Alcohol ... .7 fluid ounces
- Water, sufficient.

Upon the opium, contained in a suitable capsule, pour 12 to 14 fluid ounces of water. Boil the mixture 10 to 15 minutes; then add the spermaceti and vaseline, stir them well together, let the mixture cool and decant the liquid portion. Upon the residue pour 8 fluid ounces of water, again heat the mixture, stir it well, and after cooling decant as before. Repeat this operation once more with 8 fluid ounces of water, or sufficient to make the total fluid decanted measure 24 fluid ounces. Mix the three portions decanted, let the mixture cool, and finally add the alcohol.—*Amer. Journ. of Pharm.*

[The process is certainly less laborious than the one now officinal, but it remains to be proven whether the product is equally serviceable.—ED. N. REM.]

The Fig-Tree.*

DURING a lengthened stay in Naples and attendance at the zoological station of that city, Count H. zu Solms-Laubach, assisted by Dr. P. Mayer, one of the staff of the institute, and by Baron Valiante, made a study of the origin, domestication, and cultivation of the fig tree (*Ficus Carica*, L.), the result of which he has published in the form of a pamphlet, "Die Herkunft, Domestikation und Verbreitung des gewöhnlichen Feigenbaums. Von H. Grafen zu Solms-Laubach. Göttingen, 1882." The work is especially devoted to the study of the fig-tree, and the operation of caprification, which, as is known, consists of hanging the fruit of the wild fig upon the cultivated tree, receives considerable attention. Perhaps it will be as well to mention here, for the benefit of some less acquainted with the subject, that the fruit of the wild fig is hung upon the cultivated tree by gardeners in order that the insect which lives in the wild may enter the cultivated fruit, which they think results in preventing the figs from falling off, hastens their maturity, and improves their taste. Count Solms-Laubach begins by mentioning that in ancient times two distinct varieties of fig-trees were clearly distinguished, the fruit of the first of which is sweet, succulent, and eatable, that of the other remaining hard and milky until it attains a very imperfect maturity, without the least formation of sugar, and then quickly dries up. Count Solms-Laubach distinguishes the first species by the name of fig-tree, the other by the name of caprificus, or, as it is called in the Neapolitan dialect, "profico." The caprificus (or wild fig-tree) usually bears fruit thrice, the cultivated fig-tree twice a year. The caprificus in the interior of its fruit has both male and female flowers, the fig-tree usually only female. It is the female flowers of the caprificus fig which contain the insects which serve for the operation of caprification. Both the caprificus and the fig-tree are obtained from sowing the seed of the cultivated fig; but as the quality in such cases is generally very bad, propagation is exclusively carried on by shoots. The curious insects developed in the caprificus flowers, and called *Cynips Psenes* by Linnæus, but now named *Blastophaga grossorum*, were well known to the ancients as a means of caprification. These insects belong to the order of Hymenoptera. The females are winged, the males wingless. In Naples, where the author made the greater part of his studies, the wild figs produced at different seasons of the year are respectively named "mamme," "profichi," and "mammoni;" and it is from the first of these, the so-called mamme (which are the earliest harvest of the caprificus, and ripen in April), that the insects which have wintered therein issue in spring in order to lay their eggs in the fruit of the second harvest, the so-called profichi, which ripen in June. When this has taken place—a very few insects, thanks to their great productiveness, are able to fill numerous flowers with their eggs—the mother insects die; in May, the larvæ, and in June the perfect insects are formed, and, meanwhile, the fruit of the third harvest, the so-called mammoni, which ripen in August and September, are ready to receive the female Blastophagæ. From these mammoni, finally, the brood wanders into the mamme in order to winter, and thus the chain of events is completed, and in the following spring the laying of profichi eggs is recommenced. Let us now see what happens when the female Blastophagæ, instead of entering the figs of the caprificus, lay their eggs in those of the cultivated fig-tree. The insects, indeed, perform the operation, but are unable to lay their eggs in the proper place (for reasons shown in the pamphlet, but too detailed to be mentioned here), and the progeny, therefore, never develops. Nevertheless, the entrance of the insects has a most important influence; they carry with them into the fig with exclusively female flowers the pollen of the male caprificus flowers, and thus cause the formation of seed. Our author describes the Blastophaga as a small black insect issuing between the scales of the ripe fruit in June. Having arrived outside, it suns and dries its wings, and cleans its hairy body with its feet to rid itself of the pollen which adheres to it so thickly that it looks as if powdered. If one opens a wild fig at the proper time, a large number of these insects are seen running about, evidently seeking to escape. The wingless and helpless males are distinguished by a bright amber color. When the insects penetrate the figs of the young profichi to lay their eggs, they frequently lose their wings, so great is the effort needed. Count Solms-Laubach often found whole bunches of torn-off wings where many females had entered the same figs. They generally die after laying their eggs, while seeking their way out. Opinions are divided as to the efficacy of caprifications. By some it is considered advantageous, while others regard it as injurious. Count Solms-Laubach gives his verdict as follows: "Caprification is an operation traditionally preserved from generation to generation in the same form, which, once necessary, is now scarcely useful, but the scientific importance of which as a means of determining the changes experienced by our cultivated plants in the course of years cannot be too highly valued."

After deciding the geographical extent of the cultivation of the fig-tree, the author calls attention to the curious fact that caprification is not always practised where the insect is found. In Greece and its islands, in Sicily and Naples, in Southern Spain and Portugal, in North Africa and Syria, and Asia Minor, it is generally introduced; but it is not practised in Middle and Northern Italy, the Tyrol, Sardinia, Corsica, the South of France, Northern Spain, the Canaries, nor in Egypt. Fossil remains prove that the *Ficus Carica* was spread over the whole western portion of our present civilized world, in pre-historic times, and that it existed also in Greece and in Asia Minor cannot be doubted, in spite of insufficient proof. In France, the quaternary district in which it existed exceeded in extent the present district of cultivation.

The author believes, with Lloyd, that the fig-tree had died out in the whole of the western world, and was only reintroduced in the progress of civilization. He finds the different species so similar that a common origin cannot be doubted. Western Asia and North Africa are named as the fatherland of this origin, but without sufficient proof. The author comes to the conclusion that the fig-tree had an equatorial fatherland, in contrast to the circumpolar fatherland of the vine, and finds the most favorable conditions for such an origin in the Punjaub, Beluchistan, and South Persia, as well as in the border terraces of Abyssinia. From the circumstance that probably the invention of caprification will have gone hand in hand with the domestication of the fig-tree, and that the former operation is carried on now exactly as it was in ancient times, and also because the nation which invented caprification must have been tolerably far advanced in civilization, the author believes that the cultivation of the fig-tree commenced at a single point, and thence spread to the rest of the world. To which nation, then, do we owe it? It is proved by ancient authors that the domestication of the fig-tree was known in Greece, in the ninth century, B.C. The Bible, and especially the Semitic name of "ti'n," a word belonging to the dialect of the Bahrâ race, leads us to Arabia, as the motherland of domestication, and thence probably it spread to the Semitic peoples of Syria. These commercial nations having once possessed the tree, it was natural that its cultivation should spread. The Greeks received it from the Phœnicians, as probably also did North Africa, Southern Portugal and Spain, Sicily and Malta, and many facts speak for such a direct introduction. In Italy, the curious circumstance exists that caprification is practised in the south, but not in the north. The contrast was so great that even in the eighteenth century the North Italians were not aware that their southern countrymen made use of caprification. Count Solms-Laubach comes to the very interesting conclusion that the Romans received the fig-tree direct from the Phœnicians (of which the name *ficus* is cited as a proof), but only the tree, and not the practice of caprification, was known to

* From the *Daily News* and *Pharm. Journ.*

the Semitic races, while caprification was independently introduced into South Italy by the colonizing Greeks.

The last chapter of the pamphlet is a short study on the sycamore (*Sycamorus antiquorum*, Miq.), to which the author's attention was drawn by the many analogies between that tree (in the fruit of which similar insects are found) and the fig-tree.

Digitalin and its Congeners.

In a paper published in the *London Medical Record*, Dr. M. Hay reviews the literature connected with the early history of digitalis and its use as a cardiac stimulant, commencing with the discovery of its therapeutic properties, over a century ago, by Withering, of Birmingham; the observation of Beddoes, a little later, that the drug increased the strength of the circulation, probably by augmenting the contractility of the cardiac muscular fibre, and its confirmation by Blake, of Edinburgh, who showed by the use of the hemadynamometer that infusion of digitalis distinctly increased the pressure of blood.

It is to Prof. Schmiedeberg, of Strassburg, that we are indebted for the first accurate chemical investigation of the active principles of digitalis, and all subsequent papers on this subject have been under his supervision or at his instigation. As a result of such studies we are now aware that a considerable number of active principles, derived from various sources, possess similar properties to those of digitalin. Some of them would be preferable to it, on account of their greater solubility, and for other reasons, were it not for their scarcity or greater cost. They are all of them free from nitrogen, and some of them are acids. Prof. Schmiedeberg arranges them as follows:

I. Crystallizable Glucosides.—1. *Digitalin*, very sparingly soluble in water; prepared from the leaves and fruit of *Digitalis purpurea*. 2. *Antiarin*, sparingly soluble in water; from *Upas Antiar*, the milky juice of *Antiaris toxicaria*. 3. *Helleborein*, freely soluble in water; from the root of *Helleborus niger*, *H. viridis*, and *H. fœtidus*. 4. *Euonymin*, sparingly soluble in water; from a resinoid of the same name prepared from *Euonymus atropurpureus*. 5. *Thevetin*, soluble in 124 parts of water; from the seeds of *Thevetia nereifolia*, and of *Cerbera Odallam*.

II. Not Glucosides, in part crystalline.—6. *Digitoxin*, quite insoluble in water; from the leaves of *Digitalis purpurea*. 7. *Strophanthin*, soluble in water; in the Kombe arrow-poison of West-Africa, obtained from *Strophantus hispidus*. 8. *Apocynin*, almost quite insoluble in water; from the root of *Apocynum cannabinum*.

III. Glucosides, non-crystallizable, and very sparingly soluble in water.—9. *Scillain;* from the bulb of *Urginea scilla*. 10. *Adonin;* from *Adonis vernalis*. 11. *Oleandrin;* from the leaves of *Nerium Oleander*.

IV. Amorphous Glucosides, very soluble in water, and resembling Saponin.—12. *Digitalein;* from the fruit and probably other parts of *Digitalis purpurea*.—13. *Neriin*, probably identical with digitalein; from the leaves of *Nerium Oleander*. 14. *Apocyncin;* from the root of *Apocynum cannabinum*. 15. *Convallamarin*, very like digitalein; from *Convallaria majalis*.

V. Parts of various plants not yet investigated.—16. *Tanghinia venenifera*, its fruit. 17. *Neriodorin* and *Neriodorein;* from the bark of Nerium odorum. 18. *Upas of Singapore*, which contains, besides a strychnaceous principle, a principle which acts like antiarin.

VI. Substances which, besides other actions, possess the action of digitalin. 19. *Erythrophlœin*, freely soluble in water; from Sassy bark or the bark of *Erythrophlæum guinense*. 20. *Phynin*, from the glandular secretion and dried skin of the toad (*Bufo viridis* and *B. cinereus*).

On account of its greater solubility, and its consequent rapid absorption and probable rapid elimination, Schmiedeberg prefers helleborein to all the others, including digitalin itself. Antiarin and thevetin are probably the next most valuable principles; but are not easily obtainable, on account of the scarcity of the drug from which they are extracted. Erythrophlœin, which has only recently been separated by Harnack, may prove an efficient digitaloid, and has the advantage of being more easily obtainable than the last two. Among the active constituents of digitalis, digitoxin, by reason of its insolubility in water, is of no use [in this form, ED.]. It must be remembered that digitoxin and the other more insoluble principles of this group produce violent inflammation when injected subcutaneously, even in minute doses. Digitalin and digitalein are extremely difficult to separate in a pure state, and are, therefore, very costly. The so-called digitalin of Homolle, of Quevenne, and of Nativelle, is an impure mixture of all the active principles of digitalis, and contain some digitaliresin or toxiresin. Scillain and adoniresin occur in so small a proportion in the crude drugs that their price places them beyond the bounds of common use, otherwise they are well adapted for internal administration; as are also euonymin and strophanthin, if they can be obtained in sufficient quantity. The amorphous character of convallamarin and apocynein, like that of digitalein, must greatly impede their absorption, and, hence, can scarcely be recommended. Oleandrin and apocynin are both easily and abundantly procurable from the plants in which they exist, and are worthy of trial.

Digitonin has an action resembling that of saponin and picrotoxin, but it is present in too small a quantity to greatly affect the action of digitalis.

New Process of Imparting a Green Color to Canned Vegetables.

To give canned peas, beans, etc., a bright-green color, the French usually employ sulphate of copper in the proposition of 40 to 50 grams to 60 liters of water for 40 liters of peas. This is about 3 grams of copper per liter of peas. A great portion of this copper is afterwards god rid of by washing; yet, nevertheless, some of the poisonous salt is necessarily absorbed by the vegetable. Recently Messrs. Passoz, Biardot & Co., of Paris, have devised a new process of greening, which is very simple in its application, and claimed to be absolutely harmless, and the results of which have proved very satisfactory.

It is as follows:

1st. *For Peas.*—Into a vessel containing, say, 80 liters of boiling water there are put 40 liters of peas, which are blanched in the usual way. After this the peas are washed with cold water, drained, and put into the boxes in which they are to be preserved, and the latter are filled with a liquid prepared as follows:

A solution is first made of white sugar and chloride of sodium in ordinary water, to which is added 20 per cent of milk of lime.

After stirring, a liter of a solution with the following composition is added: 300 to 720 grams of solution of caustic soda of 40° Baumé, and 100 to 180 grams of crystallized sulphite of sodium dissolved in 500 grams of water. The tin boxes should be filled as full as possible, and afterward submitted to ebullition in an ordinary digester. This operation should last from ten to fifteen minutes according to the size of the peas, the temperature employed being from 110° to 112° C.

2d. *For Beans.*—After blanching, as above, the boxes are filled with the following liquid:

Clear lime-water	100 liters
Chloride of sodium	1 to 3 kilograms
Crystallized sulphite of sodium	a few grams.

The ebullition should last from six to eight minutes at a temperature of 106° to 110° C. As may be seen, the substances employed in this process are absolutely innocuous, especially when employed in so small a quantity.—*Annales Industrielles*.

[It has long been the practice of cooks in the United States to add a pinch of bicarbonate of sodium to the water in which green vegetables are being cooked, as a means for giving them a fresh, green appearance, and to make them tender.—ED. N. REM.]

Waras.*

WARAS, a drug known under this name, appears to be exported in considerable quantity from Aden. It is used as a substitute for ramala, a well-know Indian product of *Mallotus phillippinensis*, Muell. Arg. (*Rottlera tinctoria* Roxb.).

Its origin is quite unknown (see Flückiger and Hanbury, *Pharmacographia* [2], pp. 575, 576). At the suggestion of the former, Captain Hunter, assistant-resident at Aden, obtained specimens of the plant stated to yield waras in Arabia. He has also sent one to Kew with a note stating that it was gathered "at an elevation of 6,000 feet on Jabel Dhubarah, sixty miles due north of Aden." The plant sent was immediately identified with a leguminous species, *Flemingia congesta* Roxb., having, of course, no affinity with *Mallotus phillippinensis*. True Kamala consists of the epidermal glands detached by brushing from the fruits of the *Mallotus*. Alcohol extracts from it a splendid red color. The name "waras" means saffron,† and it may be mentioned in support of the notion that a similar substance is yielded in Arabia by perhaps one or more species of *Flemingia*, that dried specimens blonging to this genus stain paper in the herbarium a bright-yellow color when washed over with alcoholic solution of corrosive sublimate, used to protect them from the attacks of insects. *Flemingia rhodocarpa* Bak. from the Mozambique district, has its pods covered with a bright-red resinous pubescence. In the Pharmacographia (2d edit., p. 372) Flückiger and Hanbury state that *Mallotus phillippinensis* grows in Abyssinia and Southern Arabia. In a letter, Professor Flückiger doubts whether he and Mr. Hanbury were not mistaken in regard to this. The evidence of specimens in the Kew Herbarium only carries the distribution to the west of far as Scinde.

There is nothing improbable in its extending to Arabia, the flora of which is still so imperfectly known.

Wells' Pill-Coating Machine.

THE apparatus for coating pills with gelatin, here described, is the invention of Charles C. Wells, a pharmacist of Saratoga Springs, in this State. The mode of employing it, as thus described by the inventor, explains the various features of the apparatus.

The pills to be coated are placed upon the upper part of the pick-up (B), and roll down into the grooves. The needle-bar (A) is inverted so that the needle-points project downward through the notches of the pick-up and into the pills, thereby fastening a pill on each needle-point. When the needle-bar is lifted up, pills will roll into the place of those picked up. In the cover of the water bath (C) is a trough holding the solution for coating the pills; dip the pills on the needles into the solution, and slide the needle-bars (A) into one of the grooves of the drying cylinder (D), which is kept revolving until the pills are dry enough to take from the needles; then withdraw the needle-bar (A) from the drying cylinder (D), place the needles in the notches of the upper edge of (B), the pills below the strip, draw upward the needle-bar (A), and the pills will be stripped off the needles, and the bar (A) free to repeat the operation.

A Vegetable Substitute for Rennet.

OWING to the religious objection of certain East-Indian castes to animal food or, more particularly, that which must be obtained by the death of the animal furnishing it, there has been no opportunity for introducing cheese as an article of diet, the rennet of the calf essential to the process of cheese-making coming within the category of forbidden articles. To avoid this objection, search has been made for a vegetable substitute, and Surgeon-Major Aitchinson has lately brought to the notice of the authorities at Kew, England, the fact the fruit of *Puneeria coagulans*, a shrub common in Afghanistan and Northern India, possesses the property of coagulating casein. Sir J. D. Hooker* writes, that the experiment had been made with a quantity of the dried capsules of this plant. Owing to the fact that the plant belongs to the nightshade family, its safety was first carefully tested. This having been ascertained, it was then found that an ounce of the pounded capsules in a quart of water gave a decoction of suitable strength. A tablespoonful of this is capable of coagulating a gallon of warm milk in about half an hour.—*Pharm. Journal*, Jan. 20th, 1882.

Resin of Podophyllum.

IN a paper read before the Pennsylvania Pharmaceutical Association by Mr. Charles C. Clump, in answer to a query as to whether "that part of podophyllum soluble in ether represents the active ingredient of the resin," etc., the statement is made that almost all of the resin sold by manufacturers is made by precipitating it by means of alum. On comparing such resin and another, the process of manufacture of which was unknown, with resin prepared by the process of the U. S. Pharmacopœia, the latter was found therapeutically the best.

Sixty grains of each sample were separately dissolved in an ounce of commercial ether. After a few days they were filtered, the residue well washed with ether and the tared filters carefully dried. The residue from the resin precipitated by alum weighed 12½ grains, and was partly soluble in alcohol, but insoluble in water. The resin prepared by an unknown process left a residue of twelve grains, sparingly soluble in alcohol, but not insoluble in water. The pharmacopœial resin left only ⅝ grain of residue, not wholly soluble in alcohol. Two grain doses of the residues left by the two commercial samples produced no purgative effects. The results show that the pharmacopœial process gives a resin most soluble in ether—such soluble portion containing the active element of the drug; and that the twenty per cent larger yield afforded by the non-officinal processes is probably the reason for their adoption by some manufacturers.

Ichthyol in the Treatment of Rheumatism.

DR. RUDOLPH SCHRÖTTER, of Hamburg, claims to have discovered a peculiar oily compound, which he calls *ichthyol*, obtained from a bituminous substance found in certain fossiliferous rocks. This is distilled and treated with sulphuric acid. Dr. P. G. Unna states that its action in acute and chronic articular and muscular rheumatism is astonishing, and several of his colleagues report similar results.—*Med. Record* from *Monatsschr. f. Praktische Dermat.* [There is nothing in the above description of this substance to indicate that it is not what is here commonly called *kerosine*. ED. N. R.].

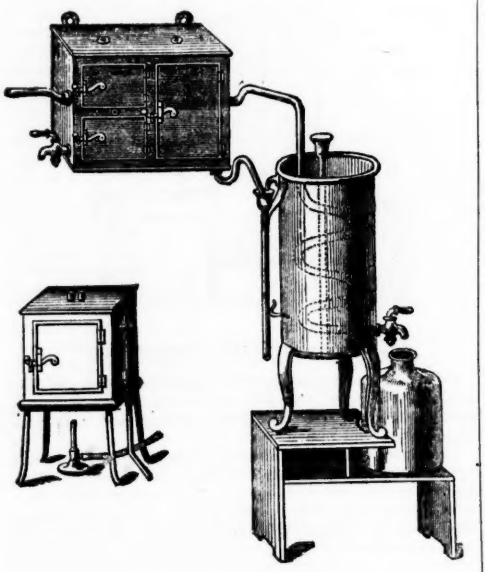
* From the Report of the Royal Gardens, Kew, England, 1882.
† ? ?—ED. NEW REMEDIES.

Hemlock Bark Extract.

THERE are produced annually in North America 100,000 barrels of hemlock bark extract, of which a single Boston firm produces 72,000 barrels. They own nine extract works and operate twenty-three tanneries. The tanneries of the United States consume annually 1,250,000 cords of hemlock bark produced in nine States.

As the yield of bark is about seven cords to an acre of hemlock timber, the yearly consumption implies the clearing of 178,000 acres.

In the main, the bark is stripped from trees cut for timber, and as the demand for this timber exceeds the supply, the supply of both timber and bark is threatened with speedy exhaustion.—*Scient. Amer.*



Seelig's Drying Ovens.

THE accompanying cuts show the forms of two drying-ovens, which have some advantages over those usually employed. Fig. 1 represents a "water-bath oven," which is to be heated by a gas-flame, and which is provided with an attachment for preserving a constant level of water. The other (Fig. 2) represents a "steam oven," containing three distinct drying chambers and provided with a condenser, which furnishes distilled water. As will be seen from the cut, the water of condensation collecting in the bottom of the steam-chamber passes through a trap, preventing the escape of steam, at once into the waste-pipe. Both of the above forms of drying ovens are made by Ed. Seelig, Heilbronn, Germany.

Pills of Permanganate of Potassium.

IN the course of a paper by Drs. Ringer and Murrell (*The Lancet*, January 13th) on the use of permanganate of potassium in the treatment of amenorrhœa resulting from some trivial cause, such as exposure to cold, striking results followed the use of this single drug in doses of one or two grains, thrice or four times daily, for a few days before the expected time for the recurrence of the menstrual flow. In connection with this subject, Mr. Martindale writes: "Having, during the past few days, heard of spontaneous combustion of these pills, which is very probable will occur if the common excipient, containing glycerin, now generally used by dispensers, be used to mass them, I wish to point out that any readily oxidized excipient should not be used. Having prepared a quantity of the pills, I found the following basis to answer best: Vaseline, 2 parts; paraffin wax, 1 part. Melt, stir till cold, and add kaolin, 3 parts; mix well. This binds the powdered permanganate together, and with a little dexterity the pills may be rolled out without much difficulty, and dusted over with kaolin. They may be coated with sandrach, dissolved in absolute alcohol, and rendered tasteless. Cocoa-butter may be used as an excipient, but it, in time, reduces the permanganate, and is troublesome to manipulate. In solution, a dose of permanganate is very nauseous; in a tasteless pill, which dissolves slowly, and yet which can be easily disintegrated, it is, besides, more agreeable to the stomach than in solution."

Mr. Barnard S. Proctor recommends the following:

℞ Permanganate of potassium.....gr. xxiv.
Powdered china-clay (kaolin).....gr. xxxvi.
Water.....gtt. xviij.
Ft. pil. No. xij.

This, he says, gives a good pillular mass, which maintains its physical and chemical conditions satisfactorily, and disintegrates promptly in water, yielding the permanganate unchanged.

He sees no reason why grease should be added to clay, as suggested by Mr. Martindale, when water is all that is required.

Complete Exhaustion of Nux Vomica.

MR. ROBERT ROTHER proposes the following method for overcoming the difficulties met with in extracting the active principles of Nux Vomica, it being well understood that the gummy or horny substance in which the alkaloids are imbedded, interfere with the solvent action of water and alcohol to such an extent, that the strength of any tincture depends, largely, upon the fineness with which the drug has been powdered.

By accident, Mr. Rother discovered that the addition of borax to a menstruum of equal parts of alcohol and water completely exhausted the powder, but left a turbid product. After a further series of trials he found that the addition of chloride of sodium served to soften the horny element and gave, moreover, a clear product, free from mucilaginous matter. He offers the following process as the result of his experiments:

Take of
Nux vomica, in fine powder.....8 troy ozs.
Chloride of sodium.....6 drachms.
Alcohol,
Water, of each.....1½ pint.

Dissolve the chloride of sodium in the water; add the alcohol and mix them. Upon 2 troy ounces of the powder, contained in a large capsule, pour two fluid-ounces of the menstruum, and mix them by means of a pestle; then gradually add the remainder of the nux vomica, and mix the whole as before. Pack this mixture firmly into a cylindrical glass percolator, and pour on the menstruum, little by little, until, in the course of six to eight hours, the liquid has descended to the bottom of the column. Now suspend the operation, and after twelve hours pour on more of the menstruum. Regulate the flow so that after twenty-four hours, 2 pints of percolate may be obtained. To avoid a trace of turbidity, which is liable to appear in the first fluid ounce of percolate when the menstruum is added too rapidly at first, 1½ drachms of the chloride of sodium may be mixed with the nux vomica before packing, and the remainder dissolved as before. The finished tincture contains ¼ grain of the salt in each 15 minims.—*Amer. Jour. of Pharm.*

Kairine, the new Febrifuge.

THE *Pharmaceutische Zeitung* (1883, No. 13) draws attention to several notices which have lately appeared in some daily (secular) papers, regarding the alleged wonderful effects of kairine, the new febrifuge discovered by Prof. Filehne, of Erlangen (see NEW REM., 1883, p. 41), and remarks that the style of the composition of those articles almost resembles a "puff."

In one of them kairine is said "to have been used and tried in various clinics and hospitals, and in all cases with uniform and truly wonderful results. It reduces the fever-temperature, with unfailing certainty, to the standard or upon any desired limit; and the patient may be kept at this temperature as long as it is required or desirable. For instance, in the case of a lady who had, for years, suffered of chronic blood-poisoning, and whose temperature rose daily to 40° C. (104° F.), kairine effected a reduction to the normal temperature, which was maintained for days. In like manner, the hectic fever of consumptives, which heretofore resisted all medication, was allayed, and prompt effects were also produced in cases of typhus and of pneumonia. The chief febrifuges of the present day, therefore, namely quinine and salicylic acid, appear to be far outranked; etc."

While there is still a probability that the new remedy kairine may be found to be of real value as a febrifuge, and for reducing temperature, it is, to say the least, highly impolitic to praise it up in an extravagant manner, in lay journals, before it has been thoroughly studied by acknowledged authorities and received the indorsement of competent therapeuticians.

The single statement that an adult had for years suffered a daily rise of temperature to 104° F. without fatal result is enough to render one very skeptical of the truth of any statement on such authority.—ED. N. REM.

Falsification of Brandy.

A LAMENTABLE picture has been drawn in a recent report of the American Consul at Rochelle of the falsification of brandy which, it appears, has in the last three years undergone a complete transformation, and is no longer brandy, potatoes, or beets. The most unsatisfactory circumstance is that even the merchants who desire to purchase a pure cognac cannot be certain that they do so, for the proprietors of the vineyard, all of whom are distillers, have become so clever in the manipulation of alcohols and the accompanying drugs that they deliberately make a brandy of any required year or quality.

The mention of the years 1849 or 1876, for instance, in an invoice or on a label, means simply that the article is presumed to have the taste or color of the brandies of those years. The increasing importation of German potato and beet alcohols into the Charente ports is an additional proof that the less brandy that is consumed the better for the health and intellect of the consumer. It is, moreover, becoming the custom to sell the brandy in twelve-bottle cases, marked with one, two, or three stars, according to the presumed quality, thus avoiding any compromising mention of year or place of production.

Some of the manufacturers import the small raisins from the east, and make what they call brandy from the juices, there being at least one such establishment in operation at Cognac.

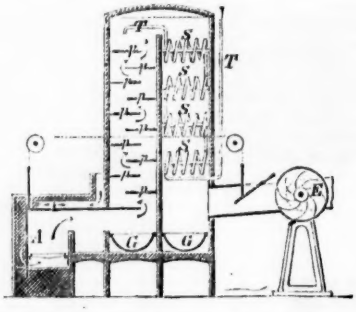
Apart from the unsatisfactory purchase of a brandy which is not a brandy, drinkers should seriously consider what are the properties of the liquid which they are so complacently imbibing. It is simply an active poison, the imported alcohol, which is known to the trade as "trois-six," being of 90° strength, and sold at a little less than three francs a gallon. Its characteristic effect is to produce an intoxication in which the patient is especially inclined to rage and physical violence, while insanity of an obstinate and almost hopeless form is the inevitable consequence of a prolonged use of it.

It is said that the great increase of violent and brutish crimes in France may be traced to the drinking of this brandy and absinthe.

The slang term for a glass of cognac is "un petrole," and for coffee with cognac "un grand deuil."

Not only in France, but in other countries, and even in the United States, these liquors are producing a condition of national alcoholism of the worst kind, far beyond the ordinary drunkenness arising from undulterated intoxicating drinks.—*Commercial Reports of U. S. Consuls.*

The above has a decidedly "sensational" ring about it, such as one is accustomed to find in daily papers devoted to news of the "penny-horror" description. We have no doubt, however, of a basis of truth at the bottom of it, nor of the fact that good domestic brandy is far superior to much that is imported.—ED. N. R



Apparatus for Rapid Evaporation.*

THE patented apparatus here described appears to offer several advantages, inasmuch as it is comparatively simple and, at the same time, offers a very extended surface for evaporation.

The liquid to be concentrated enters through the pipe T into the worm S, through which it ascends—becoming thereby heated—until it flows from the upper outlet of T upon a projecting shelf *p*, from which it drops alternately upon each succeeding shelf, until it finally flows or drops into the reservoir at G. Air heated by passing over the fire-place A (or heated so as not to come in contact with the flame itself) is made constantly and rapidly to pass upward between the shelves and downward over the worm, by means of the ventilator E.

Blaud's Pills.

I. DRIED sulphate of iron, 10.12 grams; carbonate of potassium, 15 grams; milk-sugar, 6 grams; syrup, 7.5 grams. Make 100 pills. To give a brilliant metallic lustre, roll the pills on a hard board in coarsely-powdered plumbago, dampened with a few drops of alcohol.—M. V. VALTA.

II. Sulphate of iron, carbonate of potassium, of each 15 grams; powdered marshmallow root, 1.5 grams; tragacanth, 1 gram; glycerin ointment (glycerin and tragacanth), from 1 to 1.5 gram. A greenish, plastic mass results. The pills harden in ten to fifteen minutes, and are not deliquescent.—E. RUDEAK.

III. The water of crystallization contained in sulphate of iron is to be replaced by powdered marshmallow root, and a mass formed with equal parts of mucilage and glycerin. The pills are to be dried in a drying closet. (Honey may be used in place of mucilage and glycerin.)

IV.—Dried sulphate of iron, 7.5 grams; carbonate of potassium, 15 grams; powdered marshmallow root, powdered tragacanth, 0.3 gram; glycerin, q. s. Make 100 pills.—O. SPOERL, *Pharmaceutische Zeitung.*

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* German patent 20,393 (May 25th, 1882), granted to F. Courtois and Van Roy, of Brussels.

The Cow Tree.*

THE *Palo de Vaca*, or cow-tree of South America (*Brosimum galactodendron*), grows in large forests in the mountains near Cumana, and in other parts of the sea cost of Venezuela. It forms a tree frequently over 100 feet high and often running to a height of 60 to 70 feet before branching. The milk which is obtained by making incisions in the trunk is said to have an agreeable taste like that of sweet cream with a slightly balsamic odor. It is somewhat glutinous, but said to be nourishing and perfectly wholesome. According to Boussingault, the constitution of the "milk" of the cow-tree approaches very closely that of the genuine milk of the cow. At the request of the India office, we obtained from Venezuela a supply of the seeds (through the kind assistance of Dr. Ernst, Professor of Natural History in the University of Caracas).

A case of germinating seeds was duly dispatched in October, 1880, to the superintendent of the Victoria Gardens, Bombay. No information of any kind has since reached Kew officially as to the result of the experiment. I extract, however, the following account from Mr. Stormon's report on the Khandesh Government Farm for 1881:—"Six small healthy-looking plants of the cow-tree (*Brosimum galactodendron*) were received from the superintendent of the Victoria Gardens, Bombay, in July. Of these, two were sent for trial in Dhulia, three others planted out in ordinary garden soil, and one merely shifted into a larger pot. The latter is doing well, but those planted out have made no progress, have even lost most of the leaves they had. What they may do in the hot weather remains to be seen. The home of the cow-tree in Venezuela is in 10° N. Lat., and in a doubtless very damp climate. How it will fare 11 degrees farther north, with a rainfall of under 40 inches, is a not perhaps very hopeful prospect." A portion of the seeds retained at Kew germinated, and plants were sent during the past year to the botanic gardens of the following places: Adelaide, Brisbane, Calcutta, Celon, Fiji, Java, and Singapore. In Celon, the plants are reported as doing well, though slow in their growth."

How to Bore a Hole in a Glass Shade.

A CORRESPONDENT of the *Scientific American* who asks how he can bore a hole in the top of a glass shade with the least risk of cracking it, is answered by the editor as follows:

"Make a hole in a piece of wood or metal of the size that you desire to drill in the glass. Fasten it with beeswax upon the glass for a guide. A piece of brass or copper tubing, quite thin, is supplied with emery (No. 100) and water, and twirled between fingers, or with a bow string; this will cut a hole in a few minutes. You can feed the emery and water, a little at a time, through the tube. The sketch will give you an idea as to the principle.''

This appliance may prove useful in many ways in a chemical or pharmaceutical laboratory.

Bromo-hydrate of Quinine as a Remedy for Obstinate Attacks of Malarial Fever.

DR. A. T. GARCIA, of Brazil, has used hypodermic injections of a decigram of hydrobromate of quinine with the result of arresting the progress of the disease, but with the additional effect of causing more or less serious inflammation at the seat of injection, and in adjoining tissues.—*Unio Medico* and *St. Louis Med. and Surg. Jour.*

* From the Report of the Royal Gardens, Kew, 1882.

Substitute for Balsam of Peru.

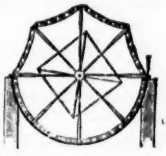
DR. BRUNNENGRAEBER, of Rostock, states, in a commercial circular, that he has succeeded in purifying crude storax so that it will contain all the active constituents, be perfectly clear, and have no foreign odor. Storax thus purified is preferred to balsam of Peru, wherever it has been tried, in the treatment of itch. The following compound has for a long time been used with success in Rostock:

Purified storax	40 parts.
Olive oil	5 "
Alcohol	5 "

—*Pharm. Handelsblatt.*

Continuous Removal of Crystals from Evaporating Pans.

GERMAN patent No. 19,974 covers an arrangement by which the crystals which are formed during the process of evaporation of saline solutions (containing common salt or any other compound which is not affected by iron, or where a slight contamination with iron is unimportant) may be constantly removed from the bottom of the pan. A series of arms moving on a centre on a level with the edge of the pan carries a loosely-hanging flat-linked chain, which, when approaching the bottom, is dragged along the inner curvature, and by an oblique or screw-motion, carries any separated crystals upward to an orifice at the upper edge, where they are thrown out.



Verbascum Thapsus, or Mullein in the Treatment of Consumption.

F. J. B. QUINLAN, M.D., Physician to St. Vincent's Hospital, Dublin, observes that, "from time immemorial the Verbascum thapsus, or Great Mullein has been a trusted popular remedy, in Ireland, for the treatment of phthisis." After relating seven cases where it proved of benefit, he concludes, "I have set down the above cases simply in the order in which they occurred, and with no view of supporting any preconceived idea. These cases, although too few to justify any general conclusion, appear to establish some useful facts. The Mullein plant boiled in milk is liked by the patients; in watery infusion it is disagreeable, and the succus is still more so. The hot milk decoction causes a comfortable (what our Gallic neighbors call *pectorale*) sensation, and when once patients take it they experience a physiological want, and when the supply was once or twice interrupted, complained much in consequence. That it eases phthisical cough, there can be no doubt; in fact, some of the patients scarcely took their cough mixtures at all—an unmixed boon to phthisical sufferers with delicate stomachs. Its power of checking phthisical looseness of the bowels was very marked, and experiment proved that this was not merely due to the well-known astringent properties of boiled milk. It also gave great relief to the dyspnœa. For phthisical night-sweats it is utterly useless. In pretubercular and early cases of pulmonary consumption, mullein appears to have a distinct weight-increasing power; and I have observed this in several private cases also. Having no weighings of these latter, however, makes this statement merely an expression of opinion. In early cases, the mullein milk appears to act very much in the same manner as cod-liver oil; and when we consider that it is at once cheap and palatable, it is certainly worth a trial.—*British Medical Journal.*

[King, in the *American Dispensatory* recommends that the decoction in milk be sweetened and flavored with aromatics. It is probably serviceable only as a demulcent.—ED. N. REM.]

Cardio-Vascular Drugs and Poisons.

M. GERMAIN SÉE thus tabulates the chief facts now known about the elective action of these agents:

	STIMULATION.	PARALYSIS.
Cardiac muscle.	Digitalin.	The same, in the second period of action.
	Iodine in small doses.	Emetine.
	Camphor.	Salts of copper, barium, and potassium
	Caffeine.	Chloral in large doses.
		Scillaïn.
Intra-cardiac muscular motor centres.		Saponin in its last period of action.
		Iodine in large doses.
Intra-cardiac inhibitory centres.	Muscarine.	Atropine.
		Sparteine in large doses.
Intra-cardiac ramifications of the inhibitory filaments of the vagus nerve.	Nicotine.	Pilocarpine, second phase of action.
	Pilocarpine.	
	Calabar bean.	
Trunk of the vagus nerve.	Aconitine.	Sparteine.
	Nepaline.	Nepaline, second phase of action.
Accelerator filaments of the great sympathetic.	Apomorphine.	Sparteine.
Medullary inhibitory centres.	Digitalin.	Chloral.
Vaso-motor centres.	Bromide of potassium.	Croton-chloral.
		Hydrocyanic acid.

—*New York Med. Journ.*

The Therapeutic Value of Hyoscyamine.

DR. T. BROWNE, of Yarmouth, has published, in the *Brit Med. Journ.* (Nov. 25th, p. 1030), the results of his experiments upon the therapeutic value of hyoscyamine. He used in his experiments Merck's crystalline hyoscyamine, and arrived at the following conclusions concerning its use: That the action of hyoscyamine, when given by the mouth, is very uncertain and dangerous; that no curative action could be claimed for it, although it proved capable of moderating, in maniacs, violence of action, and of soothing, without causing sleep; that hypodermic injection was the only safe method of using the drug. The following formula was the one which was employed, but while satisfactory as regards strength, it was found to lack stability:

Hyoscyamine (Merck's crystallized) ....4 grains.
Glycerin and distilled water, of each...½ ounce.
Carbolic acid.....2 minims.
Dissolve without heat.

Of this solution, four to eight minims are injected hypodermically. Dr. Browne states that it is very important to make the solution without heat, as heat renders the alkaloid nearly inert. He finds that the strength of any solution yet devised cannot be depended on for more than a month.—*Pharm. Journ.*

Paraldehyde—A New Hypnotic.

THE actions of this drug were first studied by Dr. Cervello, of Palermo, and his experiments were made in the laboratory of Experimental Pharmacology at Strassburg, under the direction of Schmiedeberg. Professor Morselli, of the Royal Asylum of Turin, has, in conjunction with Dr. Bergesis, the assistant medical officer, made an extensive series of observations with it. Its chemical composition is $C_6H_{12}O_3$, and it is a polymeric form of aldehyde. In physiological action it strongly resembles chloral. A dose of three grams (45 grains) procures quiet and refreshing sleep for from four to seven hours. It differs from chloral in its action on the circulatory system, strengthening the heart's action, while diminishing its frequency. It has also a well-marked action on the kidneys, greatly increasing the flow of urine. The skin is not at all affected. The drug does not give rise to digestive disturbances, to headache, or to any other unpleasant symptom. Up to the present, Professor Morselli has used paraldehyde about 350 times. He has found it a valuable remedy in mania, melancholia, and other nervous affections, as well as in the sleeplessness that accompanies acute bronchial catarrh, lobar pneumonia, and heart diseases. He believes that it will to a large extent take the place of chloral.—*Brit. Med. Journ.*

"A New Application of Chloral Hydrate."

B. BENETTI says that 300 parts of infusion of senna, 1½ to 3 parts of chloral hydrate, and 30 parts of syrup form a safe, powerful, and drastic purgative much superior to either croton oil or jalap.—*Pharm. Centralbl.* and *Chemist's Jour.*

[Precisely the same thing could be said of a mixture of an infusion of senna and syrup. There is no evidence to prove that the addition of chloral hydrate does more than correct the tendency of senna to cause griping, when taken by certain persons, and this is merely presumptive.—ED. N. R.]

White Agaric in Phthisis.

IN the *Practitioner* (November, p. 327), Dr. Murrell gives an account of the action of white agaric (*Polyporus officinalis*) in the sweating of phthisis. After numerous experiments he has arrived at the conclusion that is a good remedy, and that there are times when it may be used with advantage, but he much doubts if it is equal to atropia, picotroxin, pilocarpine, or Dover's powder. In small doses it is uncertain in its action, whilst in large doses it purges violently. The agaric was given in doses of 3 grains up to 30. The drug in 3-grain doses acted slowly and not with certainty, 3 grains of extract, equal to 9 grains of powder, acting better; whilst 30 grains purged violently. A tincture of 1 in 6 and a fluid extract 1 in 3 have also been prepared. The active principle, agaricine, has been given in the dose of ½ of a grain and was found to check cough and to promote sleep as well as to restrain sweating.—*Pharm. Journ.*

On Convallamarin and Convallarin.

THE following characteristics of the two active principles (glucosides) discovered by Walz, in 1858, in *Convallaria majalis* L., have been drawn up by the well-known manufacturing house of E. Merck, of Darmstadt, and have been kindly communicated to us by Messrs. Lehn & Fink, of New York, from whom the articles may be obtained.

Convallamarin.	*Convallarin.*
White, crystalline powder.	Rectangular crystals.
Taste persistently bitterish-sweet.	Taste scratching.
Easily soluble in water and alcohol.	Easily soluble in alcohol.
Insoluble in ether and chloroform.	Insoluble in ether. Water dissolves but very little, but the solution foams on shaking.
When boiled with diluted acids, or with solution of potassa, it splits into *convallamaretin* and sugar.	When boiled with diluted acids, or with solution of potassa, it splits into *convallaretin* and sugar.
Formula (acc. to Walz): * $C_{46}H_{44}O_{24}$ (convallamarin).	Formula (acc. to Walz): $C_{34}H_{31}O_{11}$ (convallarin).
Splits into: $C_{40}H_{36}O_{18} + \frac{1}{2}C_{12}H_{12}O_{12}$ (convallamaretin) (sugar). $+2HO$	Splits in this manner: $2C_{34}H_{31}O_{11} + 2HO = 2C_{36}H_{26}O_{6} + C_{12}H_{12}O_{12}$ (convallaretin) (sugar).
Effects, according to Marmé: In small doses, emetic and acting upon the heart like digitalis. (The action of the heart is arrested in large dogs by injections of 15 to 30 milligr. ($\frac{1}{5}$ to $\frac{2}{5}$ grain); in cats, by 5 milligr. ($\frac{1}{12}$ gr.), and in rabbits, by 6–8 milligr. ($\frac{1}{10}$ to $\frac{1}{8}$ gr.).	Effects, according to Marmé: Purgative.

Neither of these principles have as yet found extensive employment in medicine, nor has convallaria been much used, although the flowers were formerly officinal, and are still esteemed, here and there, as a popular remedy, for which reason they are still kept in stock for sale over the counter.

It is only lately that Prof. Germ. Sée has drawn attention to the importance of convallaria as a remedy. He found the aqueous extract of the plant to be the most active preparation. A concentrated solution dropped upon the heart of a frog speedily arrested its action in systole. The same prompt effect was observed in warm-blooded animals.

Employed in actual practice, the aqueous extract was found to act first as a strong diuretic, surpassing digitalis in this respect. And it has this advantage over the latter that it does not injuriously affect either the digestive or the cerebro-spinal system.

Given in doses of 1 gram (15 grains) to 1½ grams (22 grains) *daily*, it produced very favorable results in cardiac diseases.

Up to the present, no precise statements of dose have been made with respect to *convallamarin*, which is evidently the active principle in the extract.

Convallarin does not appear to be of any value.

Adulteration and Substitution of Drugs.

AT a recent meeting of the Philadelphia County Medical Society (*vide Medical Times*), Dr. Henry Leffman read a paper on "The Adulteration and Substitution of Drugs as Elements of Uncertainty in Medical Practice," in the course of which and in the subsequent discussion the following allegations were made:

Dr. Leffman quoted a gentleman having several years' experience in a wholesale drug-trade in a statement "that in most cases the so-called *fresh* drugs [powdered] were four or five years old." The same gentleman mentioned an instance "in which a quantity of a medicinal root, which had become so worm-eaten as to be unfit for sale in the whole condition, was ground up, and the powder was found to be of such unexpectedly light color that it was marked A 1—that is, first-class—and was sold as such." Dr. Leffman also said, "A feeling prevails among pharmacists that it is entirely proper to sell over the counter, to general purchasers, a tincture of opium from ten to fifty per cent weaker than the officinal article. This custom is not limited to retailers; wholesale houses of reputation furnish a diluted article for the trade." Dr. Eskridge mentioned the investigations of a friend who had found many specimens of laudanum of only twenty-five per cent, some fifty per cent, and others (not numerous) seventy-five per cent of the officinal strength.

"Sweet spirit of nitre, paregoric, and tincture of iodine are also weakened." According to a report on adulterations in the State of New York, "twenty-nine samples of quinine pills were examined, and in every case the amount of quinine sulphate was below that which the pills professed to contain. Two-grain pills were found to contain from 0.9 to 1.8 grains; three-grain pills to contain from 1.7 to 2.8 grains, while five-grain pills contained from 2.4 to 4.7 grains." The result of recent examinations by a student in Jefferson College (who, we may remark by the way, could hardly be considered a competent authority in a matter involving such technical difficulties as pill analyses) showed "that substances are often put into pills in a crude condition; articles—such as arsenic or calomel—which should be in fine powder are often in coarse grains. This statement is so extraordinary that we cannot accept it as a fact without further proof. We venture to say that no dispensing druggist or manufacture of pills, in *this* country, ever keeps in stock or purchases calomel in a crystalline state, to be reduced to powder by himself. Incidentally I may mention that some homœopathic triturations were examined, and found to be open to the same criticism."

Referring to substitutions in prescriptions, Dr. Leffman said: "From facts detailed to me by druggists, I am forced to the conclusion that in more than one drug-store in this city [Philadelphia] it is a regular practice to substitute, partly or wholly, the cheaper alkaloids of bark for quinia. I have been told, by well-informed druggists, of one store where it is believed no quinia is kept on hand; of two other stores where the standing rule was to use quinia and cinchonidia in equal parts. I present a preparation as put up in an up-town store, in which no quinia was used, although the prescription called for four drachms of it.

"Boric acid would seem to be too cheap and too distinct a body to allow of substitution; but a druggist in the north-eastern section of the city on two occasions put up borax instead—in one case furnishing it in a moist condition, in the other as a dry powder mixed with tannin. Another case of substitution was eserine sulphate for eserine bromide."

Dr. Cohen in the discussion mentioned an instance occurring in his own experience, when suppositories of quinine, instead of being made with cocoa-butter, as directed, had been made, by a so-called "first-class" druggist, with white wax.

Dr. Leffman, in conclusion, very sensibly remarked: "I think that it may be admitted that we ought to discourage all kinds of ready-made prescriptions, whether they present themselves under fanciful modifications of scientific terms, or in the plainer forms of bitters, prepared foods, compound syrups, etc. With the resources of modern pharmacy for concentrating drugs and concealing disagreeable tastes, I think no necessity exists for encouraging the wholesale manufacture of pills and granules, which may lie for months or years in the store, becoming more or less insoluble or inert. The profits of the drug-trade are in all cases large enough to allow the best service by the apothecary; and when quinine, morphia, or similar article is to be given in pill-form, no reason exists why the pill should not be made up by the prescription-clerk."

* Old notation.

BIBLIOGRAPHY.

THE DISPENSATORY OF THE UNITED STATES OF AMERICA. By DR. GEO. B. WOOD and DR. FRANKLIN BACHE. Fifteenth edition; rearranged, thoroughly revised, and largely rewritten, with illustrations. By H. C. WOOD, M.D., member of the National Academy of Science; Professor of Materia Medica and Therapeutics and of Diseases of the Nervous System in the University of Pennsylvania. JOSEPH P. REMINGTON, Ph.G., Professor of Theory and Practice of Pharmacy in the Philadelphia College of Pharmacy; First Vice-Chairman of the Comm. of Rev. and Publ. of the Pharm. of the U. S. of Am., and SAMUEL P. SADTLER, Ph.D., F.C.S., Professor of Chemistry in the Philadelphia College of Pharmacy, and of General and Organic Chemistry in the University of Pennsylvania. 8vo. Philadelphia: J. B. Lippincott & Co., 1883, pp. x. and 1,928.

JUST before closing the present number of our journal, we are in receipt of a copy of the above work, the appearance of which had been announced some time ago. Owing to the great changes in the arrangement and contents of the new pharmacopœia, the work had to be entirely remodelled, and it was a most judicious proceeding (in fact, it had been the original plan of the founder of the work) to divide the immense amount of labor entailed by its revision among the three competent specialists mentioned on the title, who have performed their several tasks with painstaking care and in a highly creditable manner.

The chief basis of the work is, of course, the new pharmacopœia. As the latter presents now a single, continuous arrangement of titles, the Dispensatory has adopted the same plan, so that the three parts of former divisions are now condensed into two, Part I. comprising the officinal drugs and preparations of the United States and British pharmacopœias—together with a few unofficinal ones considered by the authors as deserving a prominent place—and Part II. treating of unofficinal drugs and preparations of minor importance.

That the revision has been very thorough, is at once evidenced by the numerous quotations of recent investigations bearing on the different subjects, and a comparison of the corresponding articles in the previous and in the present edition will further demonstrate this. While a considerable portion of the materia medica needed but little revision, except so far as the description of drugs, the modern researches as to origin, or entirely new drugs were concerned, a much greater alteration has been necessitated in the comments relating to chemistry and pharmacy. The old nomenclature has been entirely abandoned (except in the headings of chemical titles), and all reactions and chemical discussions are based on the modern system. We have perused the chemical comments to a number of the more important articles, and have found the explanations and extent of information fully covering the ground. The pharmaceutical commentary has likewise undergone a radical change. This was chiefly necessitated by the adoption of parts by weights in the new pharmacopœia (by order of the national convention). The proportion of the ingredients in the working formulæ are given in the Dispensatory both in *parts by weight*, as in the officinal text, and also in the *ordinary weights and measures* heretofore in use, in order to accommodate those members of the profession who consider the other method too laborious. The directions for pharmaceutical manipulations scattered through various chapters and headings (Extracta, Extracta Fluida, Emplastra, Suppositoria, etc., etc.) have also been thoroughly revised and partly rewritten. The chapters on medical properties had, during several of the preceding editions, been but little overhauled, but in the present edition, the senior editor, Professor H. C. Wood, has made many important changes and additions in accordance with the modern advance of physiological therapeutics. This portion of the work, however, we cannot undertake to review or criticise in these pages, as we cannot spare the space for medical discussions. We do not always agree with the statements contained in these chapters, and have also noticed omissions of what we consider well-established facts, but therapeutics is a subject not yet classifiable among exact sciences, and much of its teachings still depends upon the "credibility of witnesses" and the individual views and theories of the observers.

A new feature of the work is the addition, below each title, of a separate line, giving the proper English pronunciation of the Latin and of other less common foreign terms, the words being divided into syllables, accented, and the vowels being distinguished by diacritical signs to indicate the method of pronunciation (the key to this will be found on page x.). In this we do not always agree with the authors, and have also noticed positive errors; as, for instance, in *Oleum Suc'cini*, which the authors want pronounced *Succi'ni*. Nevertheless, this new feature is very useful, and will help to establish a certain degree of uniformity in pronunciation, which has hitherto been a desideratum. We wish, however, to point out right here that the diacritical marks on the Latin names of alkaloids, *quini'na*,* *cinchoni'na*, *piperi'na*, etc., etc., may convey the idea that the authors favor also the corresponding English pronunciation, *qui'nine*, *cin'chonine*, *pi'perine* (the *i* as in pine), etc., etc. We do not know what the conclusion of the authors is on this point, but we surmise that it could not have been their intention to recommend such a new and startling departure, altogether foreign to usage.†

Among the addenda we find, besides the necessary tables and lists of reagents, a very useful chapter, giving the composition of all important American mineral waters and of many foreign ones.

In our cursory examination of the work, we have noticed but few misprints or oversights, and the proofs have evidently been read with the greatest care. Some proper nouns of persons have been misspelled; for instance, it should be Tauber, p. 1,607; Forskal, p. 970.

Page 256 read AR-SE'NI-I in line under title Arsenii Iodidum.

Page 264, the passage, "A solution of atropine, or any of its salts, when applied to the eye, strongly dilates the pupil," was in the original draft of the U. S. Ph., but was omitted previous to publication.

Page 889; the percentage of liquor potassæ was given as 5% in the definition on p. 887: on p 889 the percentage of the liquor of the previous pharmacopœia, 5.6%, has been quoted by oversight.

Page 1,072, in place of Tests *of* Opium, read Tests *for* Opium. Tests *of* opium are tests applied to a sample of opium to ascertain its *purity*. Tests *for* opium are tests applied to a substance suspected to contain it, to ascertain its *presence*.

In view of the fact that the formula of formic acid is given on p. 1,645 as $HCHO_2$, it would be better to write the formula for formate of potassium, on page 1,166, $KCHO_2$, instead of HCOOK. The carboxyl structure is less likely to be understood by the average reader. Under Vitellus, p. 1,539, reference should have been made to Ovi Vitellus, p. 1,080.

The type, printing, paper, and binding are excellent and highly creditable to the well-known publishers. The numerous illustrations scattered through the book, all but three of which are original, greatly add to its usefulness.

We have no doubt that the work will serve as a useful guide in following the official working formulæ of the pharmacopœia, and help to diffuse a thorough acquaintance with the latter.

It should not be omitted to add that due application, by the publishers, for permission to use the text of the U. S. Pharmacopœia (1880), for purposes of comment, has been made to and granted by the Committee of Revision and Publication.

* In absence of a font of dotted and otherwise marked vowels, we shall only indicate long and short syllables in the usual manner.

† In a few cases, such as *qui'nine*, we have heard the I's pronounced long (as in pine) by a few persons. But the great majority of chemists and others pronounce the alkaloidal termination *ine*, like the corresponding syllable in *tontine*.

NOTES, QUERIES AND ANSWERS.

Under this heading we shall, to the best of our ability, endeavor to answer such questions addressed to us, as come within the scope of this journal, provided they are accompanied by the name and address of the writer. Answers to queries received after the 5th of the month will lie over until the next issue. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for the formula of an unusual, patented, or proprietary compound, always accompany the query with any information you may already possess regarding the locality in which it is used, its use and reputed effects, in order to enable us to make inquiry without waste of time and labor. When it can conveniently be done, send also a specimen of the label used on packages of the compound.

No. 1058.—**Nitrohydrochloric Acid of the U. S. Pharm. 1880** (T. F. H.).

This correspondent writes:

"Will you kindly inform the writer, if the formula for Acidum Nitrohydrochloricum of the U. S. Ph. 1880 (p. 18) is correct. The formula directs:

Nitric acid (sp. gr. 1.420) ..... *four parts* 4
Hydrochloric acid (sp. gr. 1.160) .. *fifteen parts* 15

I could not dissolve gold leaf in the mixture. Should the formula not be *five* parts of HCl, instead of *fifteen* (15)?"

In reply we would say that the formula is correct. The reaction between the two acids takes place in the proportion of 1 molecule of nitric to 3 molecules of hydrochloric acid, which by heating, develop 1 molecule of nitrosyl chloride, 2 mol. of water, and free chlorine, which latter is the substance capable of dissolving gold, etc., in presence of the remaining liquid.

$$HNO_3 : 3HCl = NOCl + 2H_2O + Cl_2$$
$$63 \quad 3 \times 36.4 = 109.2.$$

Supposing we wished the reckon out how much hydrochloric acid is wanted, by the above equation, to mix with 100 parts of officinal nitric acid, containing 69.4 per cent of absolute acid, we would say: as 63 (or 1 molecule absolute nitric acid) is to 109.2 (or 3 molecules of absolute hydrochloric acid), so is 69.4 (the quantity of absolute acid in 100 parts of officinal nitric acid) to x (the quantity of absolute hydrochloric acid required):

$$63 : 109.2 = 69.4 : x$$
$$x = 120.3$$

That is, we want 120.3 parts of absolute HCl. The officinal hydrochloric acid contains 31.9 per cent of HCl; hence it will take 377 parts of officinal hydrochloric acid to furnish the 120.3 parts of absolute HCl. Hence the two officinal acids must be taken in the following proportion:

Nitric acid (U. S. Ph.) ..... 100 parts or 4 parts
Hydrochloric acid (U. S. Ph.) .. 377 " " 15.08 "

The Pharmacopœia directs 15 instead of 15 08, which is practically the same.

It should be remembered that the above proportions are based on the assumption that the acids are of full strength. If they are weaker, of course the proportions change. For medical purposes, a slight variation of strength in this preparation is immaterial, as it is always taken in a highly diluted condition. But for technical purposes, the strongest acids of commerce should be used, unless there is a necessity of excluding impurities.

No. 1059.—**Wahl's Improved Vacuum Pan** (W. M. T., Philadelphia, Pa.).

The address of the makers of this apparatus, described in NEW REMEDIES for February, is Wahl Bros., 238 Randolph st., Chicago, Ill.

No. 1060.—**Marchand's Phylogoos** (L. S., New York).

A correspondent wishes to know the composition of this article.

No. 1061.—**Yellow Coloring for Confectionery, Jellies, etc.** (W. S., New York).

Turmeric is probably the safest yellow coloring to use for this purpose. A tincture can be made in the proportion of one part to six parts of alcohol. It is not very soluble in water.

No. 1062.—**Machine for Making Troches** (X.).

Some time ago we had a query from a correspondent, who asked whether we knew of a machine for making troches on the large scale. We could not answer the question at that time, but can do so now by referring to an apparatus recently patented by R. H. Paulcke, of Leipsic (German patent 19,391, December 21st, 1881). The drawings and descriptions may be obtained through patent agents in this country or through agents abroad—for instance, Dr. G. Krause, in Cöthen, Germany (editor of the *Chemiker Zeitung*).

No. 1063.—**Permanganate of Potassium Pills** (H. F. L.).

Permanganate of potassium should, as a rule, not be administered internally, except in a very dilute form. To attempt its administration in solution would be useless, since the salt would be decomposed before it had time to reach the stomach. If brought in contact with organic substances, it yields up its surplus oxygen, and is reduced to a salt which is quite permanent, but which only exerts the peculiar physiological effects of manganese. The permanganate has, however, an energetic action entirely independent of the metal manganese. To combine it in a suitable mass, in pilular form, organic substances must be excluded as much as possible. A good plan is, for instance, to rub up the crystallized permanganate with white clay (kaolin), and to make a mass with the aid of water, which may be carefully formed, while damp, into pills. These may be coated, before being completely dry, with a thin layer of collodion, of an ethereal solution of tolu, or some other covering material, for the purpose of preventing them falling to pieces. The dry mixture of the salt and of kaolin, or some other inert mineral powder, however, is better given in wafer-capsules or in gelatin-capsules. Further information on this topic will be found on page 117.

No. 1064.—**Preserving Ginger Beer** (Inquirer).

The salt which is sometimes used for arresting fermentation in certain liquids is not the *sulphide*, but the *sulphite*, of lime (or calcium). The former is the calcium salt of hydrosulphuric acid (or sulphuretted hydrogen), and has a repulsive odor corresponding to this acid. The latter is the calcium salt of sulphurous acid, which is well-known to be a powerful bleaching and disinfecting agent, operating by its affinity for oxygen which it withdraws from many organic compounds, thereby being converted into sulphuric acid. It is upon this same property that the antifermentative powers of sulphurous acid depend. Sulphite of lime (or of calcium) has long been used by brewers and others, who manufacture or deal in liquids liable to further fermentation, to arrest and prevent the latter.

It is the usual practise to combine the sulphite of lime with some chalk, in order to neutralize at the same time the free acid which may have become developed in the liquor. *One* part of sulphite of lime may be mixed with *seven* parts of chalk, and from one-half ounce to one and one-half ounces of the mixture added to each hogshead. The powder should first be thoroughly stirred up, to a smooth, thin milk, with a small quantity of the liquid, and this added to the remainder.

It is a remarkable fact that sulphurous acid (and hence also sulphites) has a much more rapid and energetic action upon certain fungi which impart an insipid, mawkish, or disagreeable taste to wines and similar liquids, than upon those which cause alcoholic fermentation. It is therefore possible, by a judicious adjustment of the quantity of sul-

phite, to destroy these foreign germs without interfering with the legitimate process of fermentation.

In place of sulphite of lime, other substances may be used, particularly salicylic acid. The proper quantity will be about sixty-four grains to the gallon.

Kaolin, which our correspondent mentions in this connection, has never been used as a preservative agent, so far as we know. We cannot conceive how it could exert any such influence, since it is an insoluble clay. It has, however, been used for mechanically clarifying liquors by carrrying down with it, when it subsides, the suspended impurities. Should any of the latter consist of ferment germs, of course, these would probably be carried down also, and, in so far, kaolin may perhaps sometimes serve as a means of arresting further fermentation. It would, however, be necessary to remove the clear liquid from the sediment as soon as possible. Whether kaolin would injure the flavor would depend entirely upon its freedom from soluble constituents. It would, therefore, seem advisable before using it to subject it to a washing process—best in tubs or tanks provided with faucets at various heights, through which the wash-water can be drawn off

Pure yeast is obtained by carefully isolating, with the help of the microscope, yeast-cells (of *Saccharomycetes cerevisiæ* Meyen), from fermenting liquids, transplanting them into other liquids favorable to their propagation, and again selecting and transplanting until no other fungus but the above-named is present. This process is quite tedious, and only necessary when it is desired to study the yeast-plant itself.

No. 1065.—**Salicylated Indian Hemp Collodion** (S. H. D.).

This correspondent wants to know whether collodion can be successfully combined with salicylic acid and extract of cannabis indica.

In reply, we would say that salicylic acid is abundantly soluble in collodion; so, also, is extract of cannabis indica. A collodion of cannabis indica has been used, either alone or combined with other agents, as a corn-remedy, and, as we have been informed, with tolerable success. If the above mixture is to be used for such a purpose, we would suggest the formula proposed by Gezow (published in our volume for 1882, p. 85):

Extract of cannabis indica	5 parts.
Salicylic acid	30 "
Collodion	240 "

Mix and dissolve. Apply with a camel's-hair brush, so as to form a thick coating, for four consecutive nights and mornings. The collodion covers and protects the corn from friction. The Indian hemp acts as an anodyne, and the acid is said to disintegrate the corn, so that, after a hot bath, on the fifth day it will come out, adhering to the artificial skin of collodion on the toe.

By the way, we would repeat here that we cannot answer queries by mail, except in very exceptional cases.

No. 1066.—**Hager's Pharmaceutische Praxis** (C.).

This is one of the most useful works of reference, and is, indeed, indispensable to any practical pharmacist who is called upon to put up prescriptions involving the knowledge of European preparations or pharmacopœias. The work is in three volumes, gr. 8vo; the first and second appeared in 1876 and 1879; a supplemental third volume has just been completed. The price is, unbound, 68 marks, or, with duty, etc., about $24.

No. 1067.—**Dr. Robert Muencke** (C.).

The address of this well-known manufacturer of chemical and pharmaceutical apparatus is: Luisenstrasse 58, Berlin (N. W.), Germany.

No. 1068.—**Powdered Camphor** (Ch. S.).

Camphor may be obtained in powder in various ways. A convenient quantity may be heated, on a sand-bath, in a flask or in a metallic vessel, connected by means of a rather short and wide tube with a receiving chamber which should be rather large, and kept as cool as possible. The vapor of camphor will condense in the chamber in a fine powder. Care should be taken that the vapor does not come in contact with the flame, as it is very inflammable.

Another way is to dissolve camphor in alcohol, and to pour the solution very gradually, and under stirring, into water. Usually, however, the camphor separates, in this case, in form of lumps, which make the powder look granular. To obviate this, it has been recommended by H. E. Fish to mix the water previously with a little carbonate of magnesium. He recommends the proportion: Sixteen ounces of camphor, dissolved in a small quantity of alcohol, to be poured into a gallon of water holding sixty grains of carbonate of magnesium in suspension. The precipitate is, of course, contaminated with the magnesium salt, but this can do no harm. It is washed on a filter, and dried by exposure to air.

This form of powdered camphor keeps well in tightly-closed bottles.

Camphor may also be reduced to powder by grating and sifting, but in this case it is liable to cake together again. To prevent this, it is likewise recommended to add a small quantity of carbonate of magnesium, about twenty grains per ounce.

According to others, the running together of powdered camphor is also prevented by triturating one hundred parts of it to powder with the intervention of three parts of castor oil and six parts of absolute alcohol.

Information Wanted. Correspondents ask to know the composition of *Phalon's Vitalia.—Ellis' Spavin Cure.—Pinkham's Vegetable Compound.—Sykes' Sure Cure for Catarrh.*

Note.—The last-named compound consists of a powder and of a liquid. We know nothing about the latter, never having seen it. The former, however, is a positively dangerous compound—not so far as therapeutic activity is concerned—but because it is liable to ignite or even explode. It contains chlorate of potassium (also a little chloride of ammonium) and some vegetable powder. The application of a strong heat, or of a drop of sulphuric acid, produces the usual phenomena of violent combustion.

The Assay of Nux Vomica.

OWING to the difficulty which attends the extraction of strychnine and brucine from this drug, and the consequent uncertainty in the strength of pharmaceutical preparations made from it, Messrs. Wyndham R. Dunstan and F. W. Short, after a series of trials, have proposed the following method as giving satisfactory results: "Five grams of finely powdered nux vomica are packed in the inner tube of an apparatus for continuous extraction and exhausted by 40 cubic *cm.* of chloroform containing 25% of alcohol. This is usually accomplished in one or two hours. The solution thus obtained is agitated with 25 *cc.* of a 10-% solution of sulphuric acid. The separation of the chloroform is much aided by gently warming the mixture on a water-bath. After repeated agitation, the chloroform is separated by means of a funnel, and again shaken with 15 *cc.* of dilute sulphuric acid. The mixed acid solutions, from which all the chloroform has been separated, should, if necessary, be filtered (any turbidity caused by chloroform in a finely divided state being removed by agitation with a small quantity of chloroform), then made alkaline with ammonia, and shaken with 25 *cc.* of chloroform in a separating funnel. After the chloroform has completely separated, it is slowly run into a dish, evaporated, and weighed after exposure for one hour on a water-bath, by which time it is usually constant in weight. It is sometimes necessary to filter the chloroform after separation from the alkaline liquid.—*Pharm. Jour. and Trans.*

NEW PATENTS.

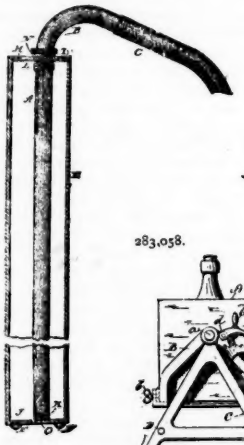
[*Complete specifications and illustrations may be obtained of any one or more of the following patents by sending the number, title, name of patentee, with twenty-five cents fo each copy, to the Commissioner of Patents, at Washington, D. C., together with the name and address of the person requesting the same.*]

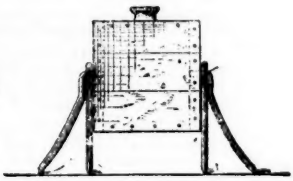
261,664. *Manufacture of Oil from Vegetables.*—Conrad F. Stollmeyer, Port of Spain, Trinidad, West Indies. The process of manufacturing vegetable oil, consisting in boiling vegetable and other substances of an oleaginous nature, under a pressure greater than that of the atmosphere, and filtering the resultant oil through charcoal.

271,859. *Method of Extracting Oleaginous Matter from Animal and Vegetable Substances.*—Joseph D. Jones, Brooklyn, assignor to Wales T. Lawton, New York, N. Y.

271,894. *Medical Compound.*—Henry C. F. Meyer, Cincinnati, Neb. Consisting of extract of echinacia, extract of hop and the extract of wormwood.

271,906. *Process of and Apparatus for Obtaining Chlorine and Sodium.*—André Leopold Nolf, Brussels, Belgium.





272,512.

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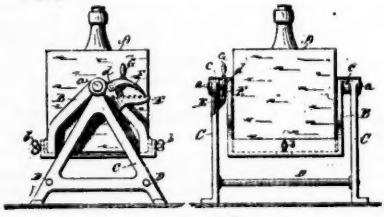

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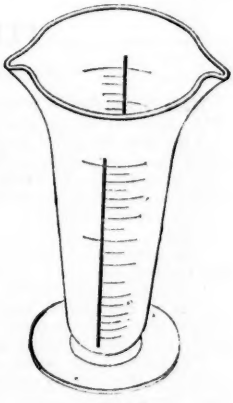

272,713.

272,127. *Method of Making Soda-Lime.*—Charles B. Dudley, Altoona, Pa.

272,134. *Oil-Press Box and Pan.*—Geo. W. Hatfield, Dayton, Ohio.

272,138. *Ointment.*—Mary G. Holder, New York, N. Y. Consists of May-weed, or *Anthemis cotula*, tallow lard, and carbolic acid.

272,207. *Self-Feeding Machine for Coating Pills.*—F. Chappell, New York, N.Y.

272,278. *Adjustable Sieve.*—Johann P. Lipps, Dresden, Saxony, Germany.

272,323. *Bottle-Wrapper.*—Henry Redlich, Chicago, Ill.

10,285 (Reissue). *Flavoring Extract for Syrup and Sugar.*—Josiah Dailey, Madison, Ind. Consists in treating saccharine material with extract of hickory.

272,484. *Bottle-Washing Machine.*—Frank B. Seiberlich, East Cambridge, Mass.

272,512. *Carboy-Stand.* Charles T. Armstrong, Corunna, Mich. A trestle for carboys or other vessels, composed of two independent metallic tripods, each provided with a trunnion. Two of the legs of the tripod are in a common plane, and the third leg is in a plane at right angles to the others. All of the legs being provided with sharp points, are capable of being fixed in the floor.

272,512. *Process of Extracting Glycerin from Fatty Matter.*—Max Ams and Victor Litzelmann, New York, N. Y. The process of extracting glycerin from fatty matter by the addition of oxide of tin, by the addition of chloride of lime, etc.

272,576. *Filtering-Bag.*—Henry Muench, Brooklyn, N. Y.

272,651. *Apparatus for the Manufacture of Sulphate of Ammonia.*—John Coates, London, England.

272,713. *Druggists' Graduate.*—Lewis C. Leake, Millville, N. J., assignor to James Whitall and Robert P. Smith, Philadelphia, Pa., John Mickle, Millville, N. J., William H. Nicholsen and Charles Roberts, Philadelphia, Pa., and Charles A. Tatum, New York, N. Y. A measure in which two scales, having different graduations, one on each side of the measure, are combined with two spouts arranged opposite to each other and at right angles to the scales.

272,904. *Magnetic Plaster.*—Charles S. Russell, Philadelphia, Pa.

272,924. *Syrup-Measure and Funnel.*—James J. Van Kersen, Kalamazoo, Mich.

273,013. *Process of Waxing Paper.*—Joseph T. Bedford, New York, N. Y.

272,960. *Vialing Essential Oils.*—C. Columbus Hudson, Bridgeport, Conn. In a vial for essential oils, etc., two or more corks inserted in said vial in such a manner that a chamber of compressed air is formed between the successive corks.

272,910. *Wooden Bottle-Wrapper.*—John Schellenberger, Indianapolis, Ind., assignor of one-half to Charles P. Jacobs, same place.

273,036. *Process of Refining Fat-Oils.*—Joseph Davis, Brooklyn, N. Y., assignor to the Davis Oil Co., of New York.

273,037, 273,038, 273,127, and 273,129. *Apparatus for Separating Bodies of Different Specific Gravities.*—Jacob W. Decastro and Teile H. Müller, New York, N. Y.

283,058. *Siphon.*—Charles Frey, Baltimore, Md. Consisting of the metallic tubes A, provided with strainers D at their lower ends, and having their upper bent ends, B, provided with rubber tubes C, and the casing E, having knobs or feet F, air-entrances G, H and I, lower apertures J, and screw-threaded apertures at top and bottom for the insertion of the tubes A.

273,061. *Device for Hacking Trees in Gathering Turpentine.*—Allen Garner, Mobile, Ala.

273,098. *Holder for Acid Carboys.*—Charles S. Joslin, Attleborough, Mass. In a holder for acid-carboys, the combination of the supporting standards and ratchet-bar with the pivoted frame, and the ratchet-catch provided with an upright handle, whereby both a backward and downward movement may be imparted to the catch with one hand of the operator in order to move the carboy to an inclined position for pouring acid therefrom, and to retain the point of the catch in contact with the notches of the ratchet-bar, and whereby the point of the catch may be elevated preparatory to the backward movement of the carboy from its pouring position.

273,236. *Healing Soap.*—James J. Johnson, Columbia, Ohio, assignor to the United States Improvement Company (limited), same place. A medicinal soap made of tallow, petroleum oil, distilled as described, rosin, lime, soda-ash and a decoction of prinos.

273,239. *Toilet Soap.*—James J. Johnson, Columbiana, Ohio, assignor to the United States Improvement Company (Limited), same place. A toilet-soap made of tallow, petroleum oil, distilled as described, rosin, lime, soda-ash, a decoction of sassafras, borax, citronella-oil and lavender-oil in about the quantities and proportions, and treated in the manner specified.

273,240. *Writing Ink*—Edward D. Kendall, Jersey City, N. J., assignor to the American Coal Tar Color Company, of New York. A writing-ink composed of an ammoniacal aqueous solution, a resin or resins, and coloring matter, in about the proportions described.

ITEMS.

New York State Pharmaceutical Association.—The committee on exhibits invite manufacturing chemists, and the trade generally, who wish to exhibit their products at this meeting, to make early application for space. Please state what articles are likely to be shown, and the amount of space wanted (in square-feet of counter-room), and the committee will endeavor to allot space to the best advantage.

The attention of exhibitors is called to Article XV. of the by-laws, which will be strictly adhered to, viz.:

"The Association invites manufacturers and others to exhibit at the annual meeting crude drugs, chemicals, pharmaceutical preparations, and such objects as possess a general scientific or special pharmaceutical interest.

"Proprietary and patented medicine, all medicinal preparations, the working formula of which is withheld, and such preparations as are offered under other than their proper, scientifically recognized names, will not be received."

Address all communications to the chairman of the committee, ROGERS SCRIBNER,
ITHACA, N. Y.

Iowa State Pharmaceutical Association.—The fourth annual meeting will convene at Davenport, at 10 o'clock A.M., Tuesday, May 1st, 1883. All communications in reference to exhibits should be addressed to Mr. J. H. Harrison, local secretary, Davenport, Iowa.

The meeting promises to be very large, and a most profitable and interesting session is anticipated.

Reduced rates will undoubtedly be secured upon all the principal railroads for the benefit of members attending.

Members having papers to present will please address the Chairmen of the Standing Committees as follows:

On Trade Interests.—Mr. Milo W. Ward, Des Moines.

On Pharmacy and Queries.—Mr. Theo. W. Ruete, Dubuque.

On Legislation.—Mr. L. H. Bush, Des Moines.

Headquarters will be at the Kimball House, where all should register soon after their arrival.

EMIL L. BOERNER, *Secretary.* A. R. TOWNSEND, *President.*

College of Pharmacy of the City of New York.—The annual meeting of the College was held on Thursday, March 15th, at 8 P.M. After the usual routine business had been disposed of, and the reports of the officers had been read—which showed the College to be in a prosperous and flourishing condition—the following officers were elected for the ensuing year:

President, Ewen McIntyre (re-elected); *Vice-Presidents*, Gustavus Ramsperger, Henry J. Menninger, George C. Close; *Treasurer*, David Hays; *Secretary*, George Innes; *Trustees* (to serve three years), Byron F. McIntyre, Henry A. Cassebeer, jr., Henry B. Parsons, S. J. Bendiner; *Delegates to the American Pharmaceutical Association*, Henry B. Parsons, Charles Rice, Henry J. Menninger, Geo. J. Seabury, P. Frederick Lehlbach.

On the same evening (March 15th), the junior class gave an entertainment to their friends, in the large lecture room of the College. The programme offered many enjoyable features, and was greatly appreciated by the large audience present.

A pharmaceutical exhibition took place, at the College building, on the evening of Friday, March 16th, under the auspices of the Alumni Association. Interesting specimens and articles of manufacture were exhibited by McKessons & Robbins, Wm. H. Schieffelin & Co., Peek & Velsor, Tarrant & Co., Dodge & Olcott, Lazell, Marsh & Gardiner, J. Becker & Sons, H. Trœmmer, A. C Dung, Stallman & Fulton, B. F. Plate & Co., and others. Special mention deserves an apparatus for coating pills (Porcupine Pill Coating, Machine), invented by Mr. Charles C. Wells, of Saratoga, N. Y. (see page 111 of this number); also a new Pressure Percolator, designed and patented by John Berry, of Biddeford, Me. In the library were exhibited, by request, a selection of rare and interesting works, in various languages, on subjects relative to pharmacy, medicine, or natural history, from the library of Mr. Chas. Rice.

The annual meeting of the Alumni Association was held on the same evening, at which the following officers were elected: *President*, George Innes; *Vice-Presidents*, C. F. Heebner, A. G. Cook, B. F. Hays; *Treasurer*, L. M. Royce; *Secretary*, Fred. Hohenthal; *Registrar*, J. Oehler. *Executive Board for One Year*, R. G. Weyh, in place of John Oehler, elected *Registrar*. *Executive Board for Three Years*, J. L. A. Creuse, H. Schmid. *Delegates to the A. P. A., at Washington*, B. F. McIntyre, George Innes, R. G. Weyh, C. E. Reynolds, H. Schmid.

President's Appointments—*Committee on Papers and Queries:* C. E. Reynolds, R. G. Weyh, C. F. Heebner. *Publication Committee:* J. L. A. Creuse, L. M. Royce, Fred. Hohenthal.

The *Commencement* of the College was held on the evening of Tuesday, March 20th, at Steinway Hall. (Owing to the late date, we can only give a list of the Graduates and the Honor-men, for the present.)

Graduates of the Fifty-Third Session, 1882-1883: C. S. Abrams, M. J. Averbeck, F. W. Becker, C. Blauw, F. H. Boyd, A. L. Browne, G. H. Bruning, D. H. Buell, W. J. Burns, J. Colp, A. G. Cook, J. A. Dankel, George Dart, G. A. Diedel, E. W. Dorr, L. A. Eberhardt, A. R. Eschmann, H. Ettinger, W. G. Frey, W. S. Funnell, E. G. Gerstle, O. Goldmann, J. Grafton, P. Grassmuck, A. T. Halsted, W. N. Haverstick, H. Heineman, J. Hubachek, H. S. Johnston, H. E. Klein, J. L. Kopf, C. C. Kræmer, J. Kraft, G. Lamb, W. S. Lawall, O. Leister, P. Link, W. G. Mangold, F. H. Manson, A. E. Marsland, C. H. Mascher, S. Miller, G. G. Needham, C. J. Proben, J. L. Putegnat, Jr., A. S. Rauschenberg, A. E. Richmond, L. F. Rœdiger, C. F. Runkel, H. Savage, W. F. Shields, W. A. Speck, J. Spillane, A. Stover, J. Wackerbarth, I. C. Warsaw, J. H. Weil, P. Westermann, R. J. Westermayr, F. H. Zitz.

In addition to the above, the following seven students, who attended special branches, passed the respective examinations successfully: W. T. Bower, E. Barnes, E. M. Butler, C. B. Grimshaw, H. H. Lloyd, A. H. Stiles, Miss A. H. Steinwedell.

Prizes. The three prizes offered by the Alumni Association for those who attained the highest standing in the

general examination were awarded to the following graduates:

First prize, Gold Medal to M. J. Averbeck.
Second prize, Silver Medal to George Dart.
Third prize, Bronze Medal to Ansel G. Cook.

A special prize, consisting of a microscope offered by an unknown friend of the College to the student passing the best examination in Botany and Materia Medica, was awarded to Mr. M. J. Aberbeck; and Mr. C. J. Proben was the recipient of a prescription balance, awarded by Prof. Bedford to the student passing the best examination in Pharmacy.

Roll of Honor of the Graduating Class, comprising the 10 graduates standing highest in order of merit, after those receiving prizes: W. S. Funnel, L. A. Eberhardt, C. I. Proben, A. R. Eschmann, F. H. Boyd, L. F. Roediger, E. W. Dorr, J. Colp, P. Link, C. F. Runkel.

Roll of Honor of the Junior Class: W. C. Rodemann, C. R. Lush, E. S. Anderson, P. C. Wadsworth, C. T. Behrens, C. O. Douden, J. B. Hargrave, H. E. Thompson, W. J. N. Hilbert, W. B. Shuptrine.

Successful Candidates at the Junior examination: E. S. Anderson, A. Bayer, Jr., J. C. Beekman, C. Behrens, H. A. Benton, R. R. Bowen, C. L. Brackett, H. Braunstein, W. D. Brokaw, S. Brothers, H. Buggle, H. L. Burmeister, E. G. Cole, A. B. Coleburn, P. H. Conron, B. L. Conwell, P. C. Crandall, F. P. Dalzell, W. O. Davis, C. Doherr, C. O. Douden, G. L. Dyson, M. S. Faust, J. S. Foulke, T. H. Francke, C. L. Gesell, B. Geseng, J. T. Gibbons, W. Hagerman, W. F. Hall, Jr, E. Hammann, J. B. Hargrave, H. Haux, H. E. Heebner, H. T. Herold, Berthi Higgins, W. J. N. Hilbert, E. Holt, F. J. Horn, P. J. Hynes, C. F. Jappe, L. Kemlage, S. M. Kolasky, J. H. Laubenheimer, R. J. Lucke, C. R. Lush, G. McGarigle, W. J. McIlvane, E. H. Merritt, C. N. Meyer, J. F. Miles, E. F. Mitchell, C. A. Moll, J. J. Mooney, A. Musler, F. C. Musgiller, Jr., G. A. Mutimer, L. R. Nathan, A. C. Naumann, J. O'Connor, C. E. Penfield, F. W. Race, L. M. Randolph, H. Rauch, A. Reich, E. A. Reuss, J. W. Reynolds, W. C. Rodemann, W. R. Rogers, E. Rosenkranz, H. W. Rouillion, L. P. Rupp, J. B. Russell, L. Ruzicka, J. C. Saile, A. E. Schaeffer, A. C. Searles, W. F. Seidler, Jr., W. B. Shuptrine, H. M. Sloat, H. D. Spingarn, J. H. Terrill, E. S. Teny, H. H. Thompson, W. Van Eerde, P. C. Wadsworth, G. C. Waldie, J. R. Warsaw, W. J. Whelan, A. V. Widmann, F. D. Wikoff, C. H. Willard, J. M. Wine, F. Wuersten, F. Yager, A. Zimmermann.

Special in chemistry: J. H. Jones.

International Pharmaceutical Exhibition in Vienna, in August, 1883.—On page 31 of our January number, we reported the preliminary arrangements made by the Executive Committee, etc., appointed to conduct the exhibition. By an oversight of the authors of the original draft, the invitations to participate in the exhibition were addressed only to *European* residents; and we expressed our hope that this error would be speedily corrected. We have just received, from the officers of the Executive Committee, a circular, from which the passage containing the blunder has been dropped; and the invitation is extended now—as it was intended from the first—to the whole world. We have only space, before going to press, to refer intending exhibitors to Dr. Hans Heger, Berggasse 22, Vienna, Austria. Applicants should state their full name and residence; their business; should give a list of the articles to be exhibited; the amount of space required in frontage, height and depth, and the form in which the exhibit is to be arranged; whether any motive power is absolutely required; also the full name and address of the authorized representative of the exhibitor. Applications to reach Dr. Heger before April 30th, 1883.

The National Museum at Washington.—A correspondent of the *New York Medical Journal*, describing some of the features of this museum, says: "One of the furthest advanced and most complete exhihits is the materia medica collection, under the charge of Surgeon James M. Flint, U. S. Navy. Here are to be found the materia medica of every pharmacopœia on earth, including, for example, those of China and Siam. Not only the preparations are shown, but the original root, bark, or leaf-drawings and pressed specimens of the characteristic parts of the plants, mineral waters, even objects used superstitiously as amulets and charms, such as horse-chestnuts against rheumatism, and the like

Connected with the exhibit proper there are in course of preparation careful collations of the synonomy of different pharmacopœias, of the differences between compounds of similar names in the officinal as well as the official preparations of different countries, and a series of descriptive labels, which are truly marvels of accurate and laborious condensation. One striking feature of this exhibit consists in the display of mineral waters. Around a liter-jar of Friedrichshalle water, for example, are grouped a number of tall vials, containing, each, one of the salts which make up the mineral water, and the exact quantity of salt contained in one liter of the water. The bottles are all of uniform height, but of varying diameter.

Russian Tariff-Regulations Respecting the Admission of Foreign Prepared Medicines.—In the new Russian tariff which went into operation on the 15th of July last, the following schedule appears of foreign prepared medicines which can only be imported by chemists, and by doctors for hospitals. The tariff is £4 18*s*., gold, per cwt.

In case of the importation of any new medicines, prepared or otherwise, and which, although known, are not specified in this list, such medicines can only be admitted by permission of the Ministry of Finance and Medical Council of the Ministry of the Interior:

Apiine capsules, copaiva balsam capsules, copaiva balsam and cubeb capsules, castor-oil capsules, cod-liver oil capsules, turpentine capsules, Grimault & Co.'s matico capsules, Joseau's copaline mège, Laloyne's cubebine balls, Berat Géles & Conté's lactate of iron balls, Colbert's essense of sarsaparilla, Quevenne's iron, Burin de Buisson's gazeol, Harleem [Haarlem?] drops, Grimault & Co.'s solution of matico for injection, ipecacuanha lozenges, Kiesow's Augsburg Essence of Life, Klepperbein's plaster for strengthening the stomach and nerves, Milan blister, Rigollot's sinapism paper, Albespeyres' epispastic paper, Aubergier's pectoral paste, pure and starched pepsin, castoreum globules, chloroform globules, digitalis globules, turpentine globules, valerian globules, asafœtida globules, ether globules, Lera's soluble phosphate of iron, or pyrophosphate of iron and soda, Vallet's pills of carbonate of iron, Fournier's pills of the extract of Paullinia, Blancard's pills of the iodide of iron, Dr. Leder's scordium powder pills; Grimault and Co.'s guarana powders, Büchner's vesicating pomade, Fournier's Paullinia powders, Rommershausen's eye essence; Boivean-Laffecteur's rob antisyphilitique, sirop d'Aubergier, Grimault & Co.'s sirop de raiford iodé, Stern's opodeldoc, Sterry's poor man's plaster, Albespeyres' vesicating plaster.

A New Fact in the Pharmacology of Butternut Bark.—W. C. Hughes, M.D., writes to the *Cincinnati Lancet and Clinic*: The following amusing incident occurred some years since in the professional experience of one of our older members of the profession:

There lived in the doctor's vicinity an old ignoramus known as a "root and herb doctor." Late one stormy night, the "root and herb doctor" called upon Dr. S., and asked him to please go and see his wife and tell him "what ailed her," and he could treat her himself. He said, "Doctor, she has a terrible pain in her bowels, and I must tell you that I sent the boys to get some butternut bark for her, and you know that, if you peel the bark up, it will 'puke 'em,' and if you peel it down it will 'purge 'em,' but the boys peeled it *round and round*, and I believe my soul it's agwine to kill her."

It is perhaps needless to say that the old lady recovered, but you may be assured that the "root and herb doctor" knew which way butternut bark was peeled before prescribing it afterwards.

An Extensive Deposit of Bismuth, in the form of metal and oxide, has been discovered in the north-east portion of New South Wales. The bismuth of commerce has hitherto been chiefly derived as a by-product in the treatment of zinc, cobalt and silver ores, and has commanded a price quite out of proportion to the cost of production. It is said that the metal from the new mines can be sent into the market at a cost which, if the present price were maintained, would insure a profit of more than £500 per ton.

Conviction for the Sale of Adulterated Sulphur.—A druggist in this city, was lately convicted and fined $10, at the suit of the State Board of Health, for selling as "precipitated sulphur" a mixture of sulphur with 30 per cent of plaster of Paris.

Misuse of Names.—*The Pharmaceutical Journal* speaks of a recent importation of safflower seed which was offered for sale as *sun-flower* seed, and of the appearance in the British market of a fragrant commodity under the name of *safflower* which had not the least claim to the name, inasmuch as it was found to consist not of composite florets, but of the finely-broken leaves of a labiate plant, *Zataria multiflora*, a native of Persia, Beloochistan, and Afghanistan. Its odor somewhat resembled that of thyme.

A Monument to Wœhler.—A call has been issued by Dr. G. Krause, the editor of the *Chemiker-Zeitung*, in Cöthen, Germany, proposing the erection of a monument to honor the memory of the lately deceased nestor of modern chemistry, Friedrich Wœhler. Almost at the same time the German Chemical Society issued a formal call for the same purpose to the members of the Society, to the former pupils and friends of Prof. Wöhler, and to the scientific world at large. The movement promises to be crowned with speedy success.

Queries to be answered at the next Annual Meeting of the New York State Pharmaceutical Association.—There are oportunities for original work in the following queries and it is to be hoped that several, at least, of them will elicit full replies:

1. Boro-glyceride—what is its value as an anti-ferment and anti-putrid agent, for pharmaceutical and commercial use?

2. Which is the best method for the manufacture of fluid extract and syrup of senega, to avoid gelatinization?

3. An examination of sulphate of cinchonidia of the various makes, as to fredom from other salts.

4. A simple method is desired by which emulsions may be examined for the amount of fixed oil they contain.

5. When pills are made of iron by hydrogen, with a vegetable extract, they almost always swell up and crack open. What is the cause of this, and how can it be prevented?

6. Pulsatilla is being used to quite an extent by our physicians, they mostly prescribing the tincture. There is no officinal preparation. King's Dispensary gives one, 8 ozs. of the herb to a pint, and other preparations, 4 ozs. to the pint. Pulsatilla, its description, properties and uses; give formulæ for tinctures now in use, with suggestions for improvement.

7. Dialysis has as yet been limited in general pharmaceutical use to a single preparation of iron. To what other processes can it be adapted? The paper to narrate experiments and processes.

8. Various formulæ have been given for the preparation of tincture of kino that will not gelatinize. It is desired that all such formulæ be experimented with, and that the results of not less than eight months' experience with the finished sample be reported upon. Each specimen should have the usual exposure and handling, which might occur in business.

9. A report on the quality of insect powder as found in commerce.

Dr. J. A. Peters.—The *St. Louis Druggist*, of February 24th, announces the recent sudden death of its editor, Dr. J. A. Peters.

The Pharmaceutical Journal and Transactions of February 24th appears in a jacket of one hundred and four advertising pages. We congratulate our able cotemporary upon such a successful business department.

A new substance, remarkable for its intense sweetness, being much sweeter than cane-sugar, has lately been found by Dr. Fohlberg, in the course of some investigations on coal-tar derivatives (*Jour. Frank. Inst.*). He designates it *benzoic sulphonide*, or *anhydro-sulphamine benzoic abid*.

Appropriation for the State Board of Health.—The New York legislature has appropriated $10,000 to prevent the sale of adulterated food and drugs, and $3,500 to enforce the law regulating the sale of illuminating oils.

Manuel Pinheiro, of Para, Brazil, one of the large rubber receivers of that region, and connected with the "corner" in rubber, is reported to have committed suicide, about the 15th of March.

The Remains of the Late Medical Inspector B. F. Gibbs, of the Navy, one of the Committee of Revision and Publication of the U. S. Pharmacopœia, have been brought to this country on the U. S. Str. Nipsic, from Trieste, and sent to Georgetown, D. C., for interment.

An Anti-Nostrum Wrapper.—The *Record* says that Dr. H. F. Darby, of Morrow, Ohio, has published a four page and double-columned sheet wrapper, filled with useful information for the sick; designed for druggists and for doctors who dispense their own medicines. It can be torn into halves, quarters, eighths, or sixteenths without marring the text. The paragraphr comprise abbreviations of that portion of the Code os Ethics relating to "The Duties of Patients to their Physif cians," useful receipts, etc. Here is something worthy the attention of the "Old Code" men!

PHARM. CALENDAR FOR APRIL.

N. B.—The officers of Socicties, Colleges of Pharmacy, Pharm. Associations, etc., will oblige us by forwarding schedules of their meetings, lists of officers, and any changes that may be desirable.

Date.	Society Meetings.
Mon. 2d.	Louisiana Pharm. Assoc.—Meet. at New Orleans.
	Erie Co. Pharm. Asso.—Meet. at Buffalo.
	Pittsburgh Coll. Pharm.—Quarterly Meet.
	National Coll. Pharm.—Annual Meet.
Tues. 3d.	Davenport Pharm. Assoc —Annual Meet.
	Chicago Coll. Pharm.—Annual Meet.
	Georgia Pharm. Assoc.—Annual Meet.
	St. Joseph (Missouri) Pharm. Assoc.—Meet.
Wed. 4th.	Rhode Island Pharm. Assoc.—Quart. Meet.
Thurs. 5th.	Louisville Coll. Pharm.—Pharm. Meet.
Friday 6th.	American Chem. Soc.—Meets at New York.
Tues. 10th.	Massachusetts Coll. Pharmacy.—Pharm. M.
	Kings Co. Pharm. Soc.—Meet. at Brooklyn.
	National Coll. Pharm.—Meet.
Wed. 11th.	New York Board of Pharmacy.—Meeting.
Thurs. 12th.	Newark Pharm. Assoc.—Meeting.
	California Pharm. Soc. and California Coll. Pharm.—Quart. Meet.
	Philadelphia Coll. Pharm.—Alumni Ph. M.
	Maryland Coll. Pharm.—Meet.
	New York German Apoth. Soc.—Meet.
	Lancaster Co. Pharm. Assoc.—Annual Meet.
Tues. 17th.	Philadelphia Coll. Pharm.—Pharm. Meeting.
	St. Joseph (Missouri) Pharm. Assoc.—Meet.
Mon. 23d.	St. Louis College Pharm.—Annual Meet.
Tues. 24th.	Boston Druggists' Assoc.—Meet.
Thurs. 26th.	Kings Co. Board Pharm.—Meets. at Brook'n.